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Commonwealth of Pennsylvania

**BOARD OF
FISH COMMISSIONERS**

**BIENNIAL REPORT
FOR THE PERIOD ENDING
MAY 31, 1928**

**HARRISBURG, PENNSYLVANIA
1929**

LETTER OF TRANSMITTAL

His Excellency Governor John S. Fisher,
Harrisburg, Pennsylvania.

Sir:

Conforming to the provisions of Article V, Section 504, of the Administrative Code, we have the honor to present herewith report of the operations of the Board of Fish Commissioners, for the period from June 1, 1926, to May 31, 1928.

For your convenience we have set forth briefly the accomplishments during your administration. The balance of the report covers the various activities in detail.

We believe with all sincerity that this report indicates more advancement than at any other time during the administration of the fisheries, and with the program for the future, Pennsylvania's fish cultural work should be far in advance of any other state in the Union.

One of the greatest needs is more fish for our waters. Before the end of the next biennium two new Hatcheries will be in full operation, which will greatly increase the output of all species.

Respectfully,

BOARD OF FISH COMMISSIONERS

N. R. BULLER, Commissioner of Fisheries
JOHN HAMBERGER
T. H. HARTER
CHARLES REITELL
M. A. RILEY
DAN R. SCHNABEL
LESLIE W. SEYLAR
F. J. WECKESSER



DOCTOR WILLIAM MANN IRVINE

DOCTOR WILLIAM MANN IRVINE

An Appreciation of his Life and Work

It rarely happens that one person is gifted with so many and such diverse abilities as were possessed by William Mann Irvine.

He had the mind of a true scholar and the heart of a boy. He loved books and he loved the woods and the mountains, among which he lived and in which he delighted to roam. He possessed what is called a "well-rounded character," which was strengthened and beautified by all of the graces of a manly Christian life.

It was because of this richness of his manhood that he made Mercersburg Academy, not only one of the outstanding boys schools in Pennsylvania, but also one of the best known schools in the United States. He not only sought to educate the intellect of his students, but to also make real men of every boy who came in contact with him.

Dr. Irvine has not passed away. He lives in the character of every boy who came to Mercersburg to be fitted for real life. He so impressed himself upon everything about him that even the school buildings of his beloved Academy will reflect his noble and devoted manhood so long as they endure. The sweet strains of music of the Chimes at Mercersburg, as they steal through the morning or evening hours along the foothills of the mountains will always tell of a life which was richer and sweeter than any music ever made by the hands of man.

Doctor William Mann Irvine was Headmaster of Mercersburg Academy. He was appointed a member of the Board of Fish Commissioners on March 21, 1924. He died Monday evening June 11, 1928, at his home, North Cottage, on the Academy campus after an illness of less than a week's duration. He collapsed while directing the "Steps Songs" at the annual commencement exercises, a custom he had established and carried out each year from the time he took over the management of the institution.

The Board of Fish Commissioners feels very keenly its great loss in the death of Doctor Irvine.

At a special meeting of the Board the following preamble and resolutions were unanimously adopted and ordered spread upon the minutes:

Whereas, it has pleased Almighty God to take from us the soul of our friend and fellow Commissioner Doctor William Mann Irvine: and

Whereas, we are filled with deepest grief and an inconsolable sense of loss by his being thus taken from us. Nevertheless, we are not without hope that, while he has been removed for a time from our midst, that he is reaping his reward in some existence high above the transient things of earth, therefore be it

Resolved, that even though his form will be no longer with us, that his life and his example will live and be an inspiration to each of us, to give as he gave—his best efforts to this Commission, to his State and to his Country, and while we shall miss him at our councils for his sincerity and honesty of purpose, we resolve to endeavor to carry on as he would have helped us to had he been spared, and be it further

Resolved, that these resolutions be spread upon the Minutes of the Board of Fish Commissioners, and that a copy thereof, duly certified by the Members of the Board, be forwarded to Mrs. Irvine and family, to the Trustees of Mercersburg Academy and to the public press.

REPORT OF THE BOARD OF FISH COMMISSIONERS FOR THE BIENNIUM ENDING MAY 31, 1928

Results speak for the efficiency of any Board or Commission. In submitting to the fishermen the accomplishments during the last biennium and the program and recommendations for the future, the Board of Fish Commissioners believes that it indicates more decided advancement in its many endeavors than during any similar period in its history.

Briefly, the outstanding accomplishments for the benefit of the angler and the program and recommendations for the future are as follows:

ACCOMPLISHMENTS

PURCHASE AND DEVELOPMENT OF SITES FOR NEW HATCHERIES

After a careful survey of all sites offered, purchase was completed of a site on Tubbs Run, Tionesta, Forest County. Active development of this site has been in progress during the last biennium and will be so far completed during 1929 that fish will be distributed. This will also be true at Reynoldsdale, Bedford County, site for which was purchased in 1925. The addition of these two new hatcheries will greatly increase the output of fish. They will be fully equipped for the propagation and distribution of all species.

INCREASED FACILITIES FOR PROPAGATION OF BLACK BASS

At the Pleasant Mount Hatchery one hundred daphnae ponds have been constructed for the propagation of daphnae which is so essential in the life of the young bass. This is real progress and the next biennium will see a considerable increase in the output of black bass.

EXTENSIONS TO PRESENT HATCHERIES

Extensive additions have been made to the hatcheries at Pleasant Mount, Corry, Union City, Bellefonte, Torresdale, which will greatly increase the output. The Board looks upon these improvements as the one outstanding accomplishment for the reason that their completion made it possible to distribute fish of a size where they would be able to care for themselves. This means there will be more and better fishing, as the streams and waters can only be brought back by stocking large size fish. Results shown during the last biennium have proved this.

The size and age of fish now distributed is as follows:

No trout are distributed except one and two year olds, ranging in size from 6 to 8, 10 and 12 inches.

Bass, three to six months old, 2 to 6 inches in size.

Sunfish, four months to one year old, 1½ to 5 inches in size.

Catfish, four months to one year old, 1½ to 8 inches in size.

All minnows distributed are adults.

Thousands of one and two year old pike perch and yellow perch are also distributed.

ESTABLISHMENT OF A BUREAU OF RESEARCH

One of the urgent needs of the Board was met by establishing a Bureau of Research. This Bureau makes studies of the fish cultural problems confronting Pennsylvania hatcheries. The accomplishments of the Bureau during the last biennium covers:

First, the selective breeding of the yellow perch and the retaining of them in sufficient numbers to furnish eggs for all jar hatcheries.

Second, the collecting of yellow perch eggs by the use of artificial spawning pens, thus increasing the egg crop by very nearly fifty per cent.

Third, the retaining of brook trout in warm water ponds during the winter months, thus greatly increasing the holding capacity at some hatcheries by making ponds produce two or three crops, where they only used to produce one.

Fourth, by increasing the holding capacity for certain ponds by replacing the old intakes with pipe sprays.

Fifth, the selection and the propagation of the proper forage fish for the baby bass.

Sixth, by a corrective diet to be able to hold parent bass from year to year without becoming sterile.

Seventh, the treatment of pond bottom to help promote a natural growth of fish food organisms.

Eighth, a practical method for sterilizing infected ponds and tank areas.

Ninth, a practical treatment for the flatworm, *Gyrodactylus*.

Tenth, a practical treatment for certain bacterial diseases caused by handling certain fish in high water temperature.

Eleventh, revolutionizing the methods of transportation by the use of transportation pails and trucks.

Twelfth, the utilization of certain milk products and cereal in feeding some species of warm water fish.

INCREASED FISHING WATERS FOR THE PUBLIC

Rapid strides have been made by the Board towards increasing fishing waters for the present and future generations. The largest project opened through the efforts of the Board is Lake Wallenpau-pack. This lake covers between seven and eight thousand acres, is approximately fourteen miles long and varies in width from two to two and one-half miles. For two years the Board stocked this lake with millions of pike perch, yellow perch, bluegill sunfish, catfish, minnows and bass. It is the most popular resort in Pennsylvania. It is estimated that 100,000 fishermen enjoyed this lake during the fishing season.

Another project in the making which will be open to public fishing is Pymatuning Reservoir, which will have a water area of 17,880 acres, will be twenty times larger than Conneaut Lake, Pennsylvania, and about one-third larger than Chautauqua Lake, New York. It will hold 74,000,000,000 gallons of water and have an irregular shore line of seventy miles.

The Conowingo Dam in the Susquehanna River at Conowingo, Maryland, has created a lake twelve miles long, five miles of which is in Pennsylvania. During 1928 Pennsylvania stocked this lake with several million sunfish, catfish, yellow perch, pike perch and bass. The owners of this lake, in lieu of a fishway, contribute \$4,000 annually towards stocking these waters in Pennsylvania and a like amount for Maryland.

LEGISLATION

The Resident Fisherman's License Law was amended increasing the Resident License Fee from \$1.00 to \$1.50. This will increase the revenue of the Board from \$100,000 to \$150,000 each year, the money to be used for the purchase and development of new sites for hatcheries.

DISTRIBUTION

Distribution of fish for the year 1926 totalled 326,736,567, representing a value of \$545,787.53, if purchased from a commercial hatchery. For 1927 the distribution was 234,644,455, valued at \$463,157.12 making a total for the biennium of 561,381,022, or a value of \$1,008,944.65. In comparison with the amount of money received, this represents a dividend to the fishermen of over \$300,000.

STOCKING STATE FORESTS

During the last biennium the streams and waters within the State Forests were stocked with 32,057,400 yellow perch and 301,750 trout, sunfish, catfish, pike perch and pickerel.

PUBLIC INFORMATION

For the information of the public the following bulletins were published during the biennium:

Bulletin No. 1—Fish Ponds for the Land Owners.

Bulletin No. 2—Selective Breeding of the Yellow Perch.

Bulletin No. 3—The Aquatic Life maintained at the Wayne Fish Hatchery.

Bulletin No. 4—A treatise on the Fish of Pennsylvania.

Bulletin No. 5—Method of caring for Goldfish in the Pennsylvania State Hatchery Aquariums.

Bulletin No. 6—Methods Employed in Producing the Bullfrog Tadpoles.

PROGRAM AND RECOMMENDATIONS

The Board adopted the following program and recommendations for the future which it believes is for the best interests of the fishermen:

APPLICATIONS FOR FISH

After a careful study of the question of distribution of fish to the streams and waters throughout the Commonwealth, the Board of Fish Commissioners has adopted the following program:

Trout—That in the distribution of trout, it will accept applications only for the main streams in the various counties; that is, the streams known as the major streams, having sufficient volume of water throughout the year, and giving ample protection for the trout. Naturally this class of stream is not affected to any great extent in the time of drought.

For many years applicants have been filing applications for hundreds of small tributary streams, believing it was better to stock the small tributaries than the main streams. It is a proven fact that with the size trout being distributed by the Pennsylvania Board of Fish Commissioners, they should be placed in the main streams and not the tributaries. Therefore, the Board of Fish Commissioners, in the future, will only accept applications for the main streams. By stocking the main streams the fishermen will not only be saving the trout but bettering the fishing conditions in their vicinity.

The trout distributed by the Board are known as "one and two year olds" ranging in size from 6 to 8, 10 and 12 inches.

Black Bass—As to the black bass, experience has proven not only in Pennsylvania but in other sections of the United States that this is a species of fish not suitable for planting in our small lakes and

streams. The Board of Fish Commissioners has therefore ruled that clubs, associations and individuals should confine their efforts insofar as the distribution of bass is concerned to the large streams which are suitable. There is no doubt in the mind of the Board but that it is a great mistake to plant black bass in our small lakes, streams and ponds if fishing is to be expected.

Sunfish, Yellow Perch, Etc.—In the distribution of sunfish, yellow perch, pike perch, catfish, etc., the Board has ruled it will continue along the same lines as previously and accept applications for all waters in which these species of fish would be suitable.

The Board feels certain that by confining its efforts to those waters which are suitable it will be improving fishing conditions and we know the fishermen will cooperate in every way possible.

COMMERCIAL HATCHERY LICENSE FOR PROPAGATION OF MINNOWS

In order to assist the fishermen in securing an adequate supply of minnows, the Board issued fifty licenses for their propagation.

ESTABLISHMENT OF A BIOLOGICAL STATION ON PRESQUE ISLE PENINSULA

The Board pledged its full support to the project of the University of Pittsburgh towards the construction of a Biological Research Station on Presque Isle Peninsula.

COOPERATION WITH THE UNIVERSITY OF PITTSBURGH IN ITS EXTENSION WORK AT ERIE

The Board adopted a program of cooperation with the University of Pittsburgh by turning over to the Director of the Extension School at Erie, Pennsylvania, sufficient floor space in the hatchery for laboratory purposes. In doing this, the Board furthered its own research problems pertaining to fish food, diseases, etc., and it will be of distinct advantage to the Board.

COOPERATION WITH STATES, FEDERAL AUTHORITIES, DOMINION OF CANADA

In order to assist the Board in securing species of fish and eggs which are not obtainable in Pennsylvania, a program was set up whereby exchanges could be made with various States on the basis of supplying those States with a like number of some species propagated by Pennsylvania.

COOPERATION WITH UNITED STATES BUREAU OF FISHERIES IN SURVEY OF GREAT LAKES

A program was adopted with the United States Bureau of Fisheries in connection with cooperative fishery investigations in Lake Erie.

STOCKING STREAMS WITHIN THE STATE FORESTS

A conference was held with the Secretary of Forests and Waters and the Board adopted a new program in reference to stocking the waters within the State Forests.

PERMITS FOR TAKING FROGS FOR SCIENTIFIC PURPOSES

In order to assist medical colleges, universities, zoological societies, etc., to secure frogs for scientific purposes, the Board authorized that permits be issued to those in authority; however, they are to be confined solely to the taking of frogs.

MOTOR BOATS ON INLAND WATERS

The Board went on record as being opposed to the use of motor boats on inland waters for the reason that they have a tendency in shallow water to destroy the aquatic plant life, which is very essential to young fish. They also destroy the nesting grounds which are in shallow water. The constant agitation over a lake or stream is detrimental to the fish. It is not possible to have both motor boats and good fishing.

COOPERATION WITH THE SANITARY WATER BOARD

During the last biennium cooperation was continued with the Sanitary Water Board. The program was further strengthened by authorizing the Commissioner of Fisheries to interview those responsible when fish are killed, and in lieu of the fine suggest a settlement or exchange. Settlements in several cases were effected, ranging from \$30 to \$1,000, the money being used for stocking the particular waters in which fish were destroyed. The fine is only one hundred dollars regardless of the seriousness of the offense.

POSTED AREAS

Where lands are properly posted fishermen must abide by the law covering trespassing. Many of these waters should be acquired from the fishermen either by purchase or lease. The Board's recommendation would be that the fishermen get behind a bill increasing the license fee, or making an appropriation specifically for this purpose.

INCREASE IN THE NUMBER OF HATCHERIES

Funds have not been available to carry out the program of ten hatcheries. The Board still recommends that this should be done in order that the number of fish distributed to our streams and waters may be increased.

AMENDMENTS TO THE FISH CODE

The Board recommended the following amendments to the present fish code:

Amend sections of law in reference to muscullonge and western pike by adding northern pike, and reducing the size from 28 to 22 inches.

Amend section in reference to seine licenses by striking out portion in reference to the Susquehanna River. This amendment should be made as shad are no longer entering Pennsylvania waters owing to the construction of the Conowingo Dam.

Amend section in reference to commercial hatchery licenses so it provides for—

The propagation of all species of trout upon the payment of \$25.00.

The propagation of all species of bass, \$25.00.

The propagation of goldfish, \$5.00.

The propagation of any other species of fish, \$5.00.

Amend section in reference to commercial hatcheries so that the bait dealer can have bait in his possession until disposed of, providing they are purchased from a commercial grower of bait.

Amend section in reference to fishways so that in lieu of their installation the Board can make arrangements for other compensation. There is no practicable fishway in existence applicable to Pennsylvania waters and this amendment will allow the Board to secure a settlement for stocking waters created by the construction of any dam.

Amend section in reference to special fish wardens so that commissions will expire on December 31st instead of May 31st.

PURIFICATION OF WATERS

The purification of our waters means much to the fishermen of the Commonwealth, and the Board of Fish Commissioners has been coöperating to its fullest extent with the Sanitary Water Board. If the fishermen will support the program of the Sanitary Water Board and lend every assistance, the results will mean much to them in the way of additional fishing waters.

There are many problems to be considered in handling this great question, and much progress has been made during the last biennium, as their report will show.

The Commissioner of Fisheries is a member of this Board and believing that the fishermen would be interested in its program which will increase the mileage of streams for fishing and recreational purposes, the following information is supplied:

The chief objective of the Sanitary Water Board of the State of Pennsylvania is to bring about improvement in the sanitary condition of the streams of Pennsylvania and to make them increasingly useful.

The streams of any State are one of its most essential assets. Most of Pennsylvania's water supplies are derived from surface streams and our cities and towns could not exist without adequate water supplies and upon their purity largely depends control of typhoid fever among the consumers.

The automobile, the splendid system of improved highways in Pennsylvania and the increase in outdoor recreation have within recent years, brought to the attention of large numbers of our city and town dwellers the condition of our streams, even in the more remote parts of the State.

Our people should and will have available for their recreational use, cleanly streams in suitable places, where the public will always be welcome to fish in a legal and orderly manner.

There are about 100,000 miles of streams in Pennsylvania varying from the tiny rivulet arising at a hillside spring to the mighty flow of the Susquehanna, Ohio and Delaware Rivers.

These streams flow through many kinds of country, the State Forests, the undeveloped mountainous districts, the agricultural areas, the oil fields, a large part of the State where rich coal deposits are found and mined, and through valleys having a dense municipal and industrial development.

It, therefore, follows, that there must be a corresponding variation in the use and condition of these streams.

With our modern civilization, our sewered towns, our enormous industrial developments, it is impossible to find the streams draining such areas in the condition which our forefathers knew them, when Pennsylvania was in its primeval condition, clad with virgin forests and inhabited by Indians.

The Sanitary Water Board fully recognizing the magnitude of the problem of the control of stream pollution is approaching this task in a practical state of mind to attain the best results in a way which will foster the prosperity of this great Commonwealth, and to that end adopted a resolution in 1923 providing for the classification of the waters of the State into three great groups.

Class A Streams are those which are unpolluted from artificial sources and the Board has done and will continue to do all that lies within its power to not only preserve their cleanliness but where practicable, to extend their length.

Through the hearty cooperation of the Board of Fish Commissioners, surveys are underway in fifteen counties where it was anticipated that the maximum mileage of Class A streams would be found.

As a result of this work the Sanitary Water Board has designated in seven counties about 5000 miles of streams as Class A, and through the abatement of first sources of pollution, have extended their length about 100 miles.

As this work progresses it is expected that a very large mileage of Pennsylvania streams will be thus designated as Class A.

Class B streams are those which are more or less polluted and hence generally found in the developed parts of the State. The resolution of the Board fixed the policy that the degree of treatment of pollution arising on their watershed will be determined by a consideration of the present and probable future use and condition of the stream; the practicability of remedial measures for abatement of pollution, the economies of each particular case, and the general interests of the public through protection of the public health; the health of animals, fish and aquatic life and the use of the stream for recreational purposes.

Class C streams are those now so polluted that they cannot be used as sources of public water supply, will not support fish life and are not used for recreational purposes and also, from the standpoint of the public interest and practicability, it is not now necessary, economical or advisable to attempt to restore them to a clean condition.

It is a big task to make the necessary field surveys in order that the Board may designate streams as either Class B or C.

A mere walking along a stream and looking at it, does not give a real picture of its condition, nor does such a survey disclose its use as oftentimes important water works intakes are not in evidence. Trained Sanitary Engineers are required to make these surveys and the Sanitary Water Board is planning to do this work by means of motorized laboratories so that as the engineer traverses the stream he can stop from time to time, take samples of the stream water and of substances discharged into the stream and make analyses at once in the field, as many such samples change in character if transported to a central laboratory.

One of the important duties of the Board is the matter of issuance of sewerage permits.

State law requires such permits shall be issued to municipalities before public sewers shall be constructed and when such plans are submitted with application for permit they are examined by engineers and a field inspection made, reports on which are submitted to the Board for its consideration in connection with the issuance of the permit.

The Board has continued the policy of the Department of Health in past years by always encouraging and requiring in permits that municipalities should cause to be prepared comprehensive plans of sewer systems in order that municipal funds shall be spent along orderly lines rather than toward the building of a haphazard sewer system.

The Board also recognizes full well that municipalities have many demands for proper expenditure of their available funds and that in many cases it is not practical for a municipality to raise the money to immediately build a complete system of intercepting sewers, pumping stations and sewage treatment works, and, therefore, the Board encourages municipalities to adopt financial programs for the progressive construction of these needed works over a number of years which brings the project within the financial ability of the town.

One of the most difficult problems in improving the sanitary condition of the waters of the State is the matter of disposal of industrial wastes.

Some industrial wastes probably contain materials of value which can be recovered as by-products.

For some industrial wastes, and the number is probably not large, there are now known, reasonable and practicable ways and means for treatment in order that an effluent can be produced capable of discharge into the stream without harm.

But for a majority of industrial wastes there is today not known reasonable and practicable methods of treatment and disposal.

For many years past, attempts at enforcement of drastic legislation for the abatement of stream pollution by industrial wastes had been of no avail. The Sanitary Water Board frankly recognizing this state of affairs, has inaugurated what is believed to be a new procedure, namely, cooperation with industry in groups for the solution of this vexatious problem.

In 1924 the Board proposed such cooperation to the leather tanning companies operating in Pennsylvania and the outcome was the execution of an agreement between these companies and the Board whereby the leather tanners have created a fund of \$35,000 which is being expended by a committee of experts in scientific investigations to determine just what are the characteristics of tannery wastes, how it can be practically treated and to what extent streams of different rates of flow can inoffensively receive such waste waters.

As a result of these investigations it is believed that the first step in practical processes of treatment of tannery wastes are nearly found.

The Board next approached the pulp and paper industry of Pennsylvania and again a committee of experts was appointed who have been studying the problem. A formal agreement was made with the pulp and paper companies which to date, has been executed by 22 of them, including practically all of the largest pulp and paper mills of the State having an aggregate daily capacity of six million pounds.

Intensive research investigations of pulp and paper mill waste disposal will be undertaken by a committee of experts under this agreement.

The Board has entered into an agreement with a laundry whereby full scale investigations will be made of a process of treating laundry wastes which was originally devised by one of the engineers of the Department of Health.

The treatment of laundry wastes has been heretofore almost an unsolved problem.

The Board firmly believes that more and surer progress will be made by such cooperative investigations than in any other way.

The new Sanitary Water Board under the administration of Governor Fisher, has adopted a very important resolution which establishes four important policies. The resolution is as follows:

WHEREAS: It is essential for the Sanitary Water Board to determine certain basic policies for its own guidance and

WHEREAS: It will facilitate the business of the Board with the public, the municipalities, and the industries of Pennsylvania if they be informed of such policies, therefore be it

RESOLVED: That the following basic policies be established by the Sanitary Water Board:

(1) PUBLIC SEWERS

Municipalities should have prepared, adopt and submit to the Board for approval, comprehensive sewerage plans and financial programs for the progressive construction of intercepting sewers and sewage treatment works, if the latter have been required.

(2) CLASSIFICATION OF STREAMS

The Board will diligently proceed so far as available funds will prudently permit, with the field surveys required to obtain the physical and scientific information needed by the Board to designate streams as Class A, B and C in accordance with the resolution of the Board adopted August 8, 1923.

(3) COOPERATION WITH INDUSTRY

The Board intends to carry out the letter and also the spirit of the 1924 agreement with the leather tanners of Pennsylvania and the 1926 agreement with the pulp and paper makers of Pennsylvania for investigation of industrial waste disposal problems.

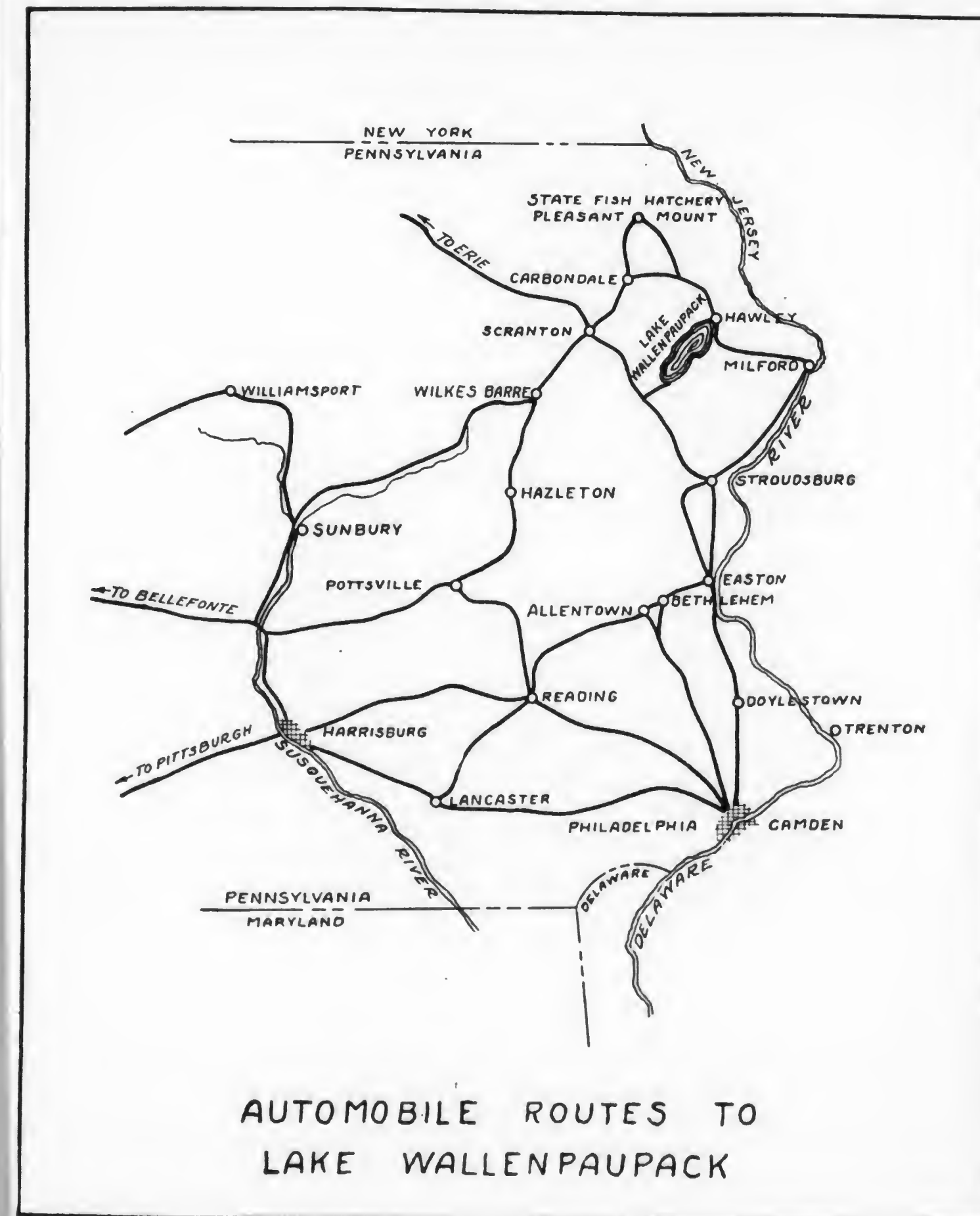
The Board invites like cooperation with all other industries who are confronted with the problem of treatment and disposal of industrial wastes to abate stream pollutions.

(4) LEGISLATION

The Board looks with favor upon constructive anti-stream pollution legislation, in accordance with the above principles and which will be helpful in carrying out a comprehensive plan for the sanitary conservation and prudent utilization of the water resources of Pennsylvania, including a recognition of the varying uses and conditions of streams and the well-being and prosperity of the municipalities, industries, and citizens of this State.

The Board will look with disfavor upon legislation destructive to cooperation between the Board and municipalities and industry because such cooperation is believed to be the most practicable solution of the problems of improving the waters of the State.

The interest and support of the citizens of Pennsylvania, of the officers of its municipalities, of the industries of the State, will be of great help to the Sanitary Water Board in carrying out its broad comprehensive plans for the sanitary conservation and prudent utilization of the water resources of the great State of Pennsylvania.



CREATING NEW FISHING WATERS

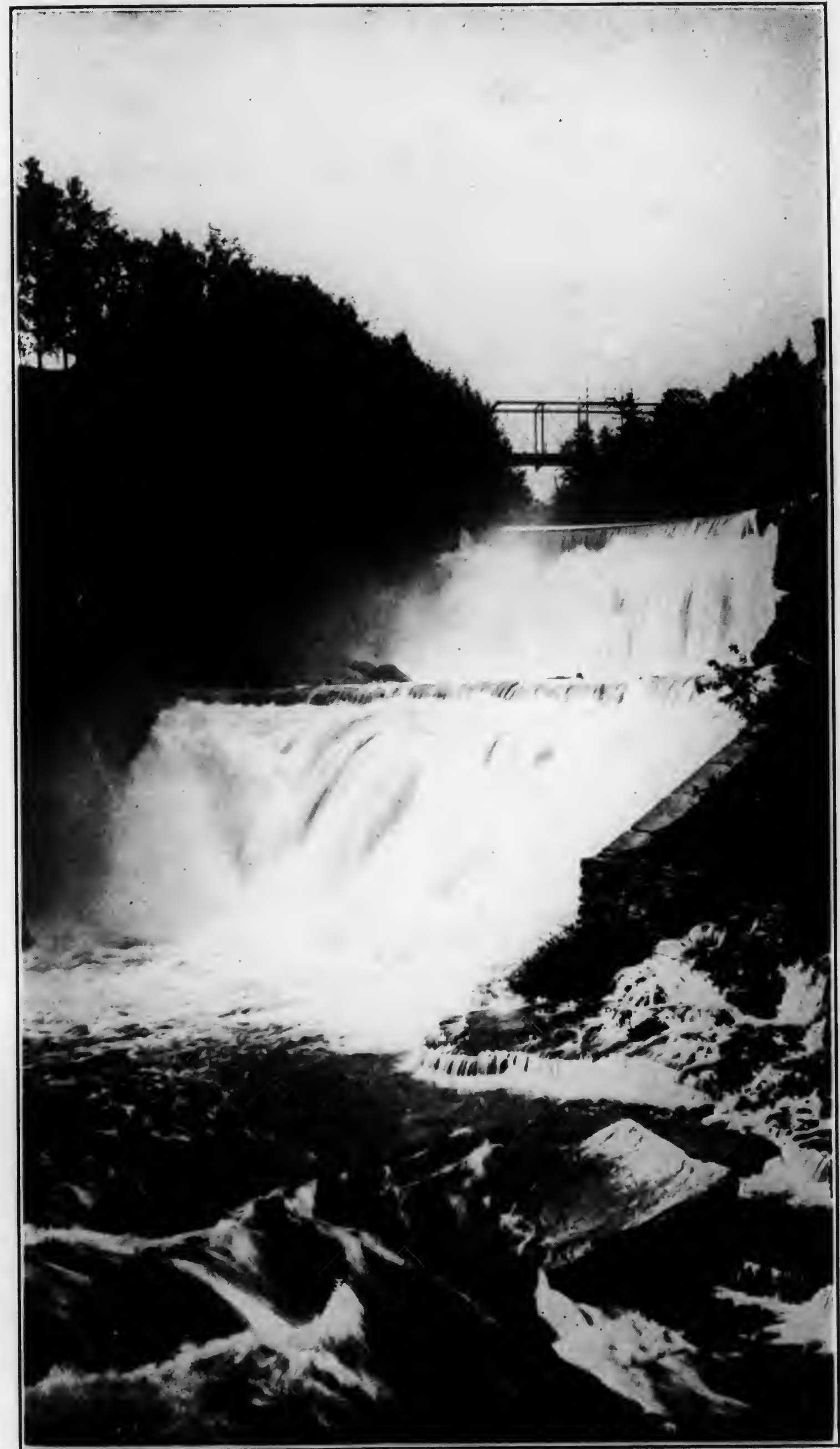
One of the most important functions of the Board of Fish Commissioners is that of providing additional waters for fishing and recreational purposes. It is only second in importance to that of the hatching and raising of fish for distribution to the streams and waters in which the public is allowed to fish.

Pennsylvania has thousands of miles of good fishing streams and numerous lakes and ponds which are open to public fishing. Unfortunately in certain sections there are waters which are not available for the reason that the land owner has posted his property prohibiting trespassing. Where lands are properly posted according to law there is nothing for the fisherman to do but to abide by the provisions of that law.

At one of the first meetings of the Board of Fish Commissioners a resolution was passed refusing to close any waters to the public except those within the wire enclosure of a Game Reserve, the waters within the confines of a cooperative nursery, or within the limits of a public park, borough or city for exhibition purposes. The streams are closed within the Game Reserves for the purpose of assisting the Game Commission in enforcing their laws so that fishermen will not trespass with the excuse of fishing. Those closed for cooperative nurseries is to assist the Associations throughout the Commonwealth operating nurseries in conjunction with the United States Bureau of Fisheries.

Prior to the enactment of the Administrative Code, which provides for a Water and Power Resources Board, it was the custom of corporations or individuals applying for permits for the erection of dams for manufacturing or ice harvesting purposes to either post these dams to trespassing and fishing or to issue permits charging a fixed fee per day for fishing.

Under the provisions of the Administrative Code, the Commissioner of Fisheries is made a member of the Water and Power Resources Board and at one of the first meetings attended, he presented a resolution providing that all permits granted in the future for dam construction and covering the impounding of waters for power and manufacturing purposes should contain, in addition to other conditions, the right to fish in such waters at all times during the open season in accordance with such rules and regulations as might be promulgated by the permittee from time to time with the approval of the Board of Fish Commissioners. Of course, this does not apply to dams constructed for domestic purposes.



WALLENPAUPACK FALLS

CREATING NEW FISHING WATERS

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WALLENPAUPACK FALLS

This resolution was presented on August 21, 1923 and naturally it took several years before any results were shown.

Lake Wallenpaupack

The first project of any magnitude was that of the Pennsylvania Power and Light Company for the construction of a dam across the stream known as "The Wallenpaupack", located at a point near Hawley, Wayne County. The lake which was formed by the damming of this stream is known as "Lake Wallenpaupack". The northern portion of the Lake is situated in Wayne County and the southern in Pike County. The water surface covers between seven and eight thousand acres, is approximately fourteen miles long, varies in width from two to two and one-half miles, with an irregular shore line measuring approximately fifty-two miles. Upon completion of the dam, this lake was closed to fishing for a period of two years which gave the Board of Fish Commissioners ample time for stocking it and to arrange rules and regulations so that it would be a recreational ground for the public not equalled in the State. During the two fishing seasons it was closed, millions of pike perch, yellow perch, bluegill sunfish, catfish, minnows and bass were planted. Also several thousand pairs of adult fish of the same species were supplied for breeding purposes. A program of stocking has been formulated for each year.

On August 1st, 1928, this lake was thrown open to the public for fishing, swimming, boating and other recreational purposes. It immediately became a popular resort. The Board of Fish Commissioners had representatives on the ground on the opening day and it was estimated that there were five thousand fishermen. A little over a month later, Labor Day, it was estimated that this number had increased to at least ten thousand fishermen. Of course, all fishermen must have either a resident or a non-resident fishing license. The catches have been most gratifying and the Board has received much commendation for what it has done towards creating what is now one of the finest fishing waters in Pennsylvania. Much credit must be given to the Pennsylvania Power and Light Company, Allentown, who are the owners, as it could only have been achieved by their excellent cooperation. They have taken great pains to provide public camps and parking sites which are located at convenient places with road connections to the main highways. These camp sites are available for several days without any charge and have water and cooking facilities. Caretakers have been appointed who supply any information which might be desired.

In order that everyone may be thoroughly familiar with the provisions and requirements governing the use of Lake Wallenpaupack, we are setting forth below the regulations as they were promulgated



LAKE WALLENTAUPACK

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LAKE WALLENPAUPACK



LAKE WALLEPAUPACK



LAKE WALLEPAUPACK



LAKE WALLEPAUPACK



LAKE WALLEPAUPACK

INTENTIONAL 2ND EXPOSURE

by the Board of Fish Commissioners and the Pennsylvania Power and Light Company:

Provisions and Requirements

All persons availing themselves of the privilege of the use of Lake Wallenpaupack and the lands of the Pennsylvania Power and Light Company and the Pennsylvania Realty and Investment Company, and all holders of permits issued by said companies for boating, camping, or other uses of said Lake and surrounding lands, are requested to comply with the following:—

1. Standing trees and shrubbery should not be broken, cut, shot at, barked or otherwise injured. Animals may not graze on the company's property.
2. Birds should not be molested or their nests destroyed or interfered with.
3. Fires may be built in holes or pits prepared for the purpose and encircled with the earth taken out, but great care must be taken in extinguishing them before they are abandoned. Fires should not be built upon "runways" and matches, cigars, cigarettes or pipe ashes ought to be carefully extinguished after use. Representatives of the company or the Department of Forests and Waters of the Commonwealth of Pennsylvania may call upon anyone to assist in extinguishing forest fires.
4. Signs, posters or advertisements which will disfigure the natural beauty of the company property should not be erected.
5. All springs and surface waters should be protected from contamination.
6. Any litter, waste or refuse which may accumulate should be removed and the property left in as clean condition after use as it was found when entered upon.
7. Persons using the Lake or company lands assume all risk of injury to person or property and waive any and all claim or claims for damages on account of such injury to persons or property that could or might be made by reason of the exercise of the said right, liberty or privilege, and shall indemnify and save harmless the Pennsylvania Realty and Investment Company and or Pennsylvania Power and Light Company of and from any and all claim, loss, damage or injury growing out of such exercise.
8. Please report promptly to the Lake Superintendent or his agent any violation of law or of the terms and conditions of camping, boating and similar permits.

Fishing

Fishing in season will be permitted on the waters of Lake Wallenpaupack, except within 100 feet of or from the Wallenpaupack Dam and Tafton Dyke.

Boating

Effective August 1st, all permits issued by the Commissioner of Fisheries for the use of row boats, sail boats and canoes are terminated and it is necessary for the holders of all existing permits to reapply for new permits to be issued annually by the company.

These new permits will include the use of motor boats and will be issued under the following provisions:

1. Each permit will have a number assigned to it and this same number will designate the number of the boat on the company's records.

A plate with the corresponding number will be furnished to each holder of a permit and this plate is to be displayed at all times on the boat.

2. Boats of any kind will not be permitted within 100 feet of the Wallenpaupack Dam.

3. Permits for the use of boats may be revoked or cancelled for violation of the laws or of the provisions and requirements of the company, or whenever the company deems it advisable to do so.

Permits for Boats to be Hired

Permits for boats to be hired for use on Lake Wallenpaupack will be issued upon payment of the following fees:

Row boats and canoes, \$1.00 per annum per boat or canoe.

Motor boats, sail boats and ice boats (less than six passengers), \$5.00 per annum per boat.

Motor boats, (six passengers and above) Rates on application.

In all cases where boats are for hire, tariffs or schedules setting forth the rental and terms and conditions of such should be posted on the property in a conspicuous place where patrons may easily see them.

Boat Houses

The erection of boat houses will be permitted along the shores of Lake Wallenpaupack, provided they are constructed to conform to plans and specifications approved by the company and maintained under and subject to the following provisions and requirements:

1. Boat houses should be maintained in good condition and should bear the number of the permit issued therefor, in plainly legible numerals displayed thereon.
2. Permits for erection of Boat Houses will be issued upon payment of a fee of \$1.00 per annum per boat house.
3. The permit for a boat house may be revoked or cancelled for violation of law or of any of the provisions and requirements of the company or whenever the company deems it advisable to do so.

Docks

The erection of docks, which should be of the floating type, will be permitted along the shores of Lake Wallenpaupack, provided they are constructed to conform to plans and specifications prepared by the company, or when such plans are approved by the company. They shall be maintained under and subject to the following provisions and requirements:—

1. Docks should be securely fastened at all times.
2. On or before December 1st of each year, all docks, except those of a permanent nature constructed on stone or concrete piers, should be removed from the shore lines of Lake Wallenpaupack and stored above elevation 1195. Loose boards, steps, etc., on permanent docks should be removed on or before December 1st of each year and stored above elevation 1195.
3. Docks should be maintained in good and safe condition and should bear the number of the permit issued therefor in plainly legible numerals displayed thereon.

4. Permits for docks for use on Lake Wallenpaupack will be issued upon payment of a fee of \$1.00 per annum per dock.

5. Permits issued for docks may be revoked or cancelled for violation of law or of any of the provisions and requirements of the company or whenever the company deems it advisable to do so.

Temporary Camps

Camping on the lands of the Pennsylvania Power and Light Company and the Pennsylvania Realty and Investment Company, other than lands under lease to tenants or other restricted areas, will be permitted provided application is first made in writing on a form provided for this purpose to the Lake Superintendent and subject to the following terms and conditions:

1. A suitable trench or pit should be provided at least 2 feet in depth for the disposal of excreta, said pit to be located on level or gently sloping ground not closer than 100 feet from any spring or surface stream nor above the sources of the camp water supply. Earth from the pit shall be banked on the high side. Before camp is opened the permittee shall provide a quantity of hypochlorite of lime (chlorinated lime or "bleach") equivalent to at least one pound for each week the camp is to be occupied. Contents of the pit shall be thoroughly sprinkled with this chemical twice each week the camp is occupied using not less than one-half pound thereof at each application and immediately thereafter, it shall be covered with a thick sprinkling of clean earth.

When the deposits in such pit have accumulated to within six inches of the surface of the ground, its use should be discontinued and clean earth used to backfill the pit to the original surface of the ground and another pit shall be dug at once.

When the camp is vacated, all such pits should be backfilled with clean earth and any excess excavation neatly rounded over the top.

Garbage should be disposed of in a separate pit similar to that provided for excreta, but garbage shall not be placed in the same pit with the excreta.

Kitchen and wash water should not be thrown into any spring or surface water or upon the surface of the ground in the immediate neighborhood of a spring or surface water.

2. The camp site should be kept neat and clean at the time of leaving, so as to make it at least as clean as when entered upon. The permittee shall pay the bill of the company for restoring the site to proper condition if it is not so left.

3. No camp should be erected within $\frac{1}{8}$ of a mile of another camp or until a written permit is received or until the site has been approved by a company officer or agent on the ground. Permanent structures may not be erected. The camp and all property shall be removed from the company's lands within three weeks, unless within that time an extension of the permit for a longer period is granted by the company in writing. A permit fee of \$1.00 for each person shall be enclosed with the application for a temporary site.

These provisions and requirements are issued at this time for the guidance of the companies' guests. The companies expect to revise them from time to time as experience may dictate in the operation of Lake Wallenpaupack.

The Lake Superintendent of the Company, whose office is at Wallenpaupack Dam, is in charge of all real estate, land, etc., of the company surrounding the Lake; also the operations on the Lake, applications for permits, as well

as complaints, etc., pertaining to these matters should be made to him either in person or by letter addressed to him at Hawley, Wayne County, Pa.

Pymatuning Reservoir

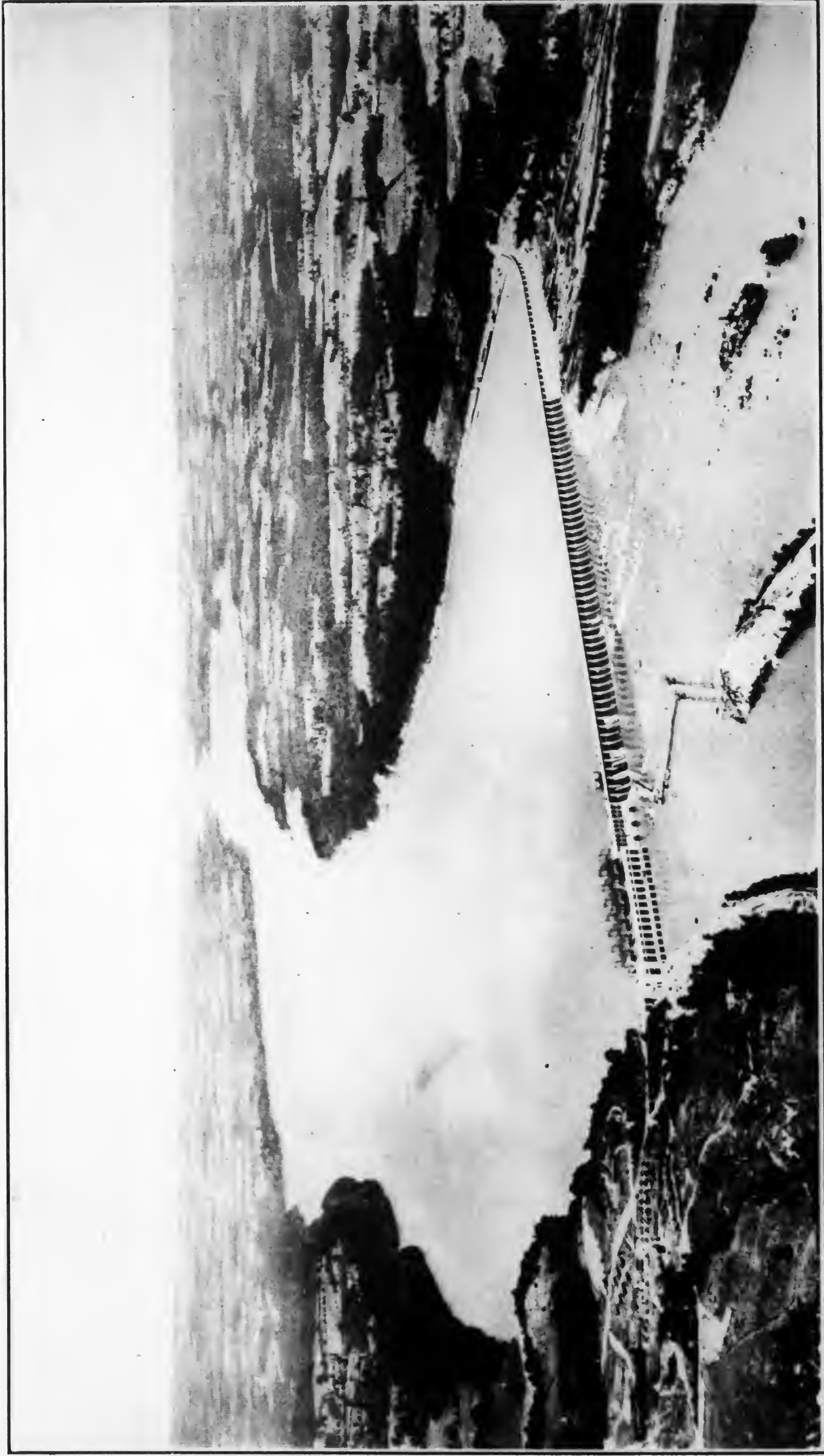
Another project is in the making which when completed will be several times the size of Lake Wallenpaupack and will benefit the fishermen throughout the entire Commonwealth. This project is what is known as "The Pymatuning Reservoir" in Crawford County, Pennsylvania, and will be built primarily to provide sufficient water during dry seasons of the year for domestic and industrial use in the Shenango and Beaver Valleys, but on account of its extensive surface the reservoir will also be able to absorb floods and thus reduce flood damage. When full it will cover an area of 17,880 acres and will be nearly twenty times larger than Conneaut Lake, Pennsylvania, and about one-third larger than Chautauqua Lake, New York. It will hold about 74,000,000,000 gallons with an irregular shore line of seventy miles. No doubt the same rules and regulations will be adopted covering this body of water, as that of Lake Wallenpaupack.

Conowingo Dam

The Conowingo Dam in the Susquehanna River has been completed during the last year. While it is not located in Pennsylvania, nevertheless, it has been of great benefit to Pennsylvania fishermen for the reason that its construction has created a lake approximately (12) miles long, five (5) miles of which is in Pennsylvania.

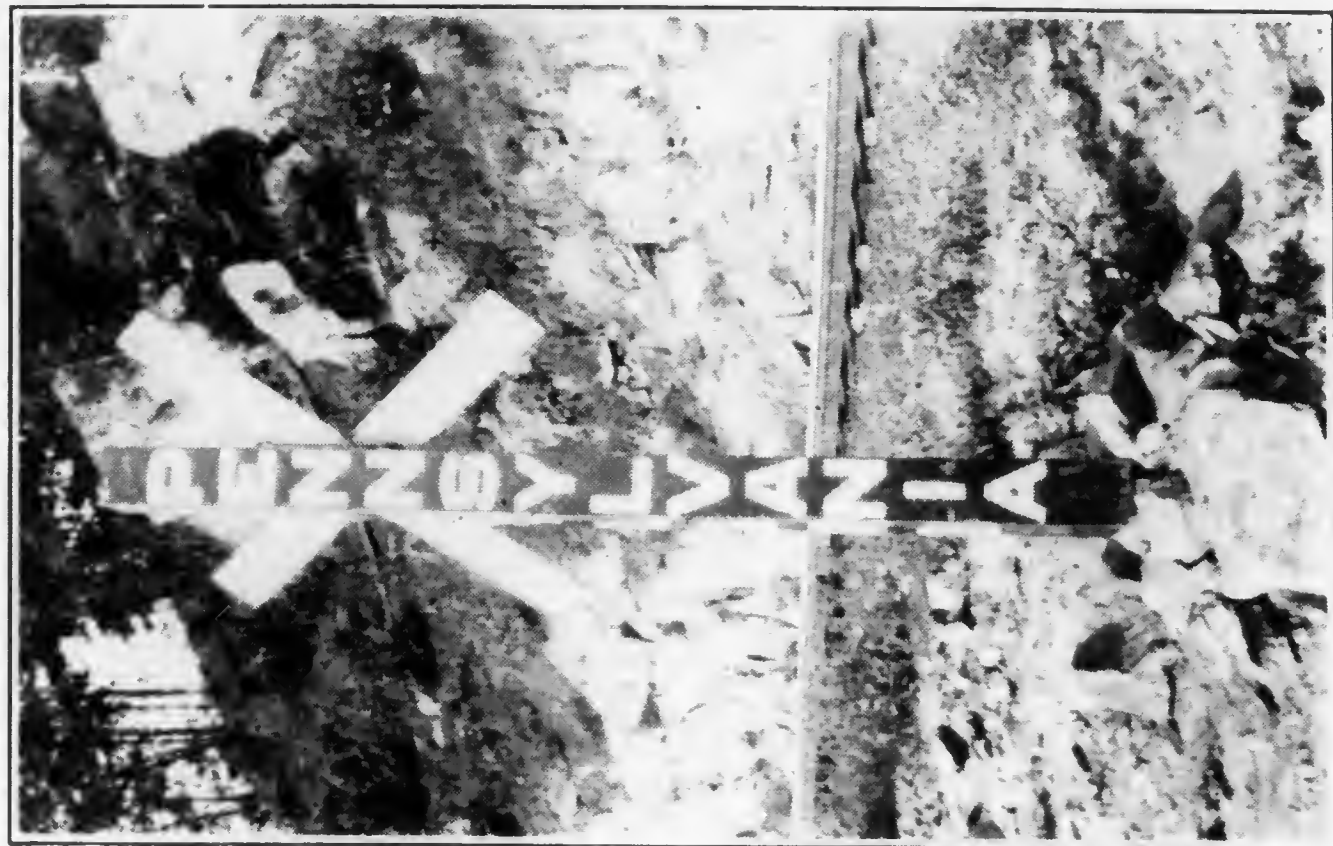
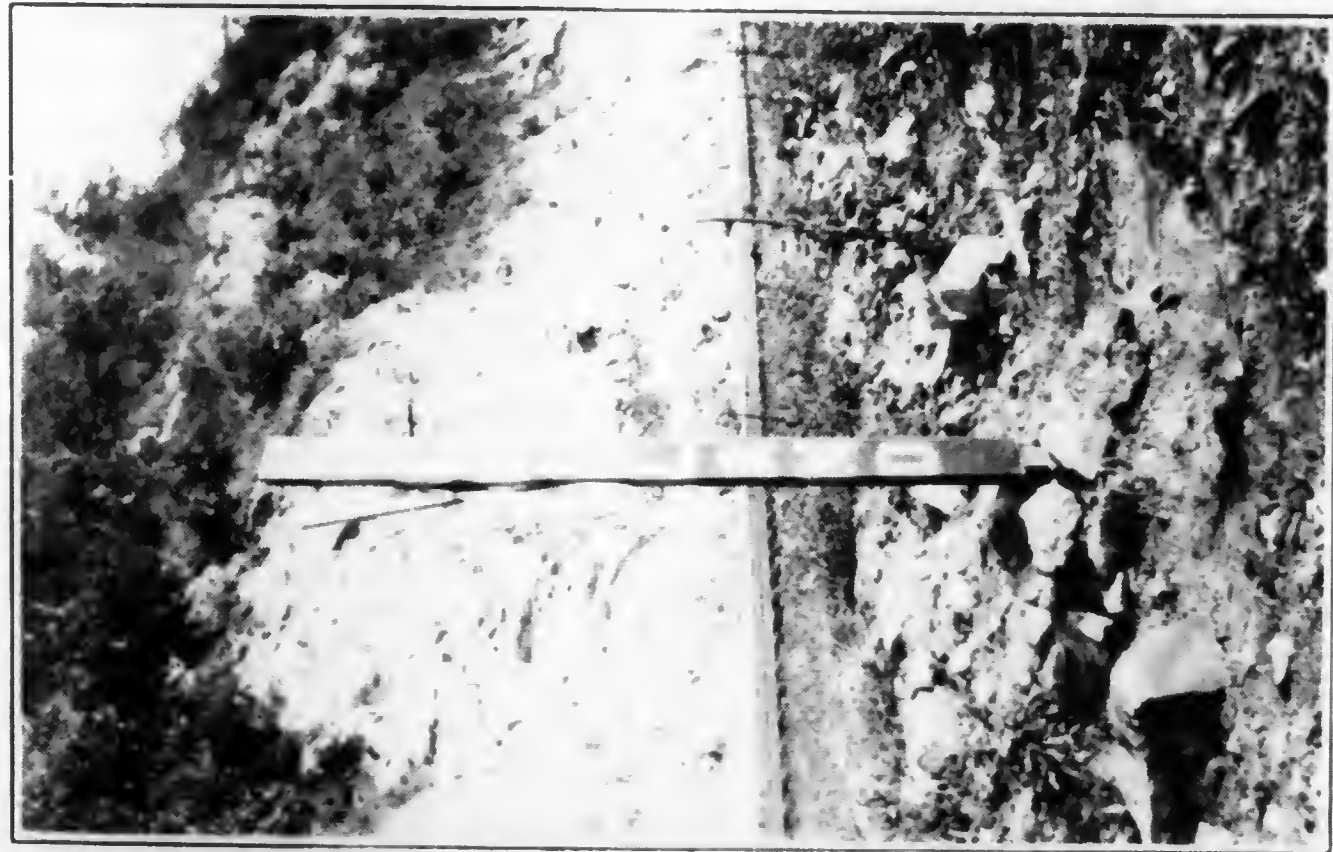
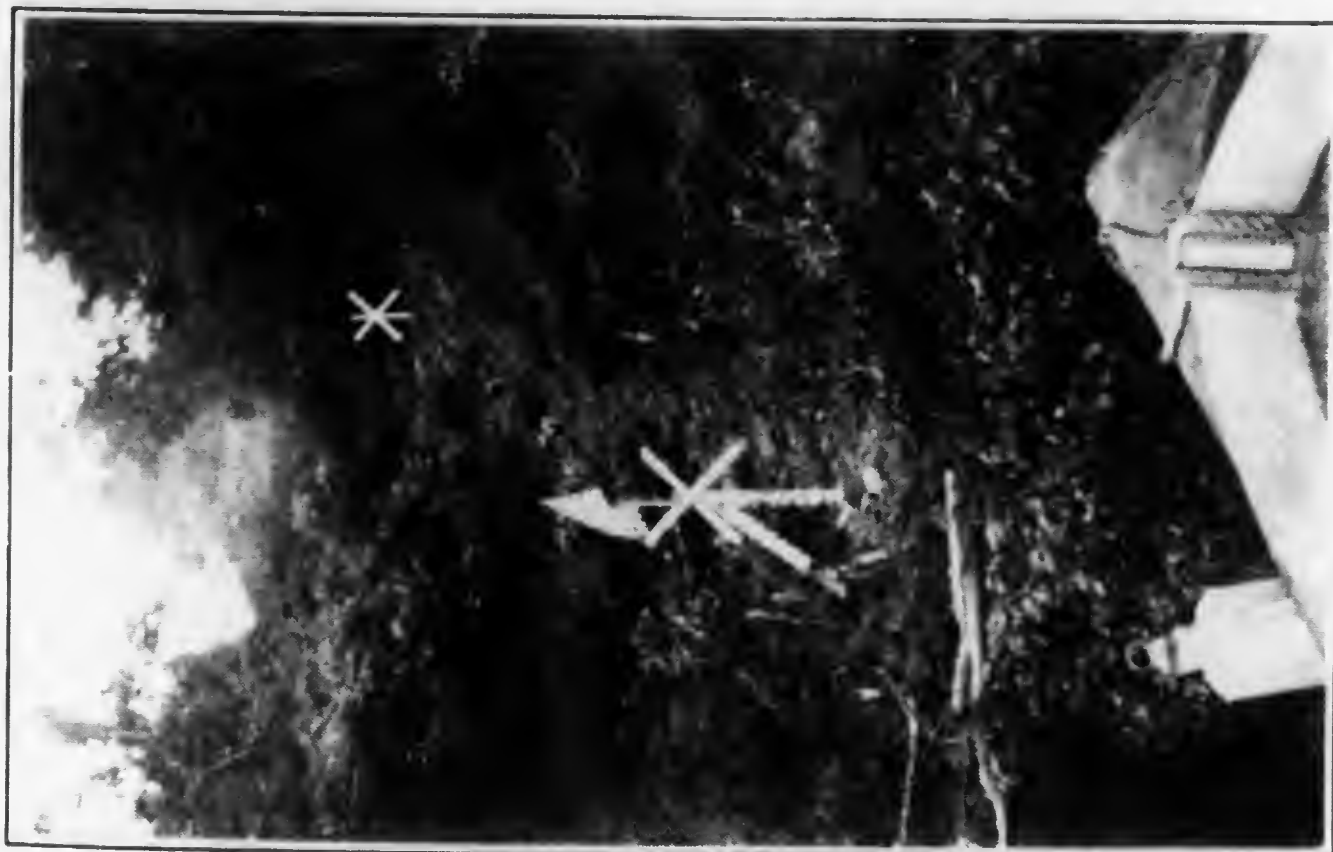
This lake practically reaches the tail race of the power dam at Holtwood, which is located in the Susquehanna River between Lancaster and York Counties. It is now open to public fishing and is being stocked by the States of Pennsylvania and Maryland. At the time of its construction the Commissioner of Fisheries of the state of Maryland requested the Commissioner of Fisheries of Pennsylvania to come to Baltimore for a conference, in reference to fishways. The dam is approximately 90 feet high and it was agreed by those who were competent to speak on the subject, including representatives of the United States Bureau of Fisheries, that it would be useless to attempt to construct a fishway as there is no known fishway in existence which is practicable for a dam of this character. Pennsylvania does not request the installation of fishways as there is no practicable fishway in existence which is applicable to Pennsylvania waters.

It was therefore agreed by the States of Pennsylvania and Maryland that in lieu of the construction of a fishway, the Power Company should contribute to each State the sum of four thousand dollars



MARKERS SHOWING BOUNDARY LINE BETWEEN MARYLAND AND PENNSYLVANIA

INTENTIONAL 2ND EXPOSURE



MARKERS SHOWING BOUNDARY LINE BETWEEN MARYLAND AND PENNSYLVANIA

(\$4,000) payable every year, to be used for the purpose of stocking the lake which was formed by the construction of this dam.

During the last year Pennsylvania has furnished several million pike perch, sunfish, yellow perch and catfish; also several shipments of large sized bass.

As there might be some question as to the line between the two states, Pennsylvania requested the state of Maryland to have the line properly marked so that fishermen would have no difficulty in ascertaining in which part of the lake they were fishing. Of course, if the fisherman wishes to go into the State of Maryland he would have to take out a non-resident license. All that he would need on the Pennsylvania side is the Pennsylvania license.

Holtwood Dam

The Board also wishes to mention the Holtwood Dam built many years ago in the Susquehanna River at Holtwood. The lake which was formed by the construction of this dam extends to the vicinity of Safe Harbor, Lancaster County, covering approximately four square miles and is producing much fishing for the public.

Additional Waters

In addition to the foregoing there are forty dams of smaller area which in the near future will be available to the public, rules and regulations will be drawn up as soon as the dams are completed.

Due notice will be given the public. While the majority cover only a few acres, nevertheless, they will provide excellent fishing waters and will be stocked each year with the species of fish most suitable.

Many miles of excellent trout streams have also been made public at the request of the Board of Fish Commissioners, the purchasers having been those who were interested in the construction of large dams.

Fishermen should not forget the millions of acres of forest land which has been purchased by the Department of Forests and Waters. On these lands are many excellent fishing waters which are available for fishing. The public is always welcome in the State Forests and every accommodation possible has been created for their comfort. The Board deeply appreciates this close cooperation.

Posted Areas

As to waters in different sections of the Commonwealth which are posted and under private ownership, the courts have ruled that you cannot take a man's property away from him without due process of law. Unfortunately at the time the original grants were made by the Commonwealth, they included the land under the waters which



HOLTWOOD DAM

were situated thereon, except waters which were termed as navigable.

The Board of Fish Commissioners believes that many of these waters should be acquired by purchase or lease so that the public can have access to them for fishing purposes. Of course, this is a question which is entirely up to the fishermen. If it is to be done through purchase there is only one thing which the fisherman can do and that is to get back of a bill increasing the fisherman's license fee and have the increase in the license set apart in a fund wholly for the purchase of waters of this character. Another method would be by appropriation. The fishermen certainly would be taking a step in the right direction if they supported any measure of this kind, should it be introduced at the next session of the Legislature.

As long as the present Board of Fish Commissioners is in existence the fishermen can rest assured that it will bend every effort toward increasing public waters.

Conclusion

In conclusion, the Board wishes to say that with the facilities at hand it is doing its best to stock all waters which are open to public fishing. Of course, it could distribute many times the number of fish which are available. The main problem in the restocking of any water is the regulation, conservation and maintenance, and the Board hopes that with the completion of the two new hatcheries which are at present under way, it will be possible to increase the number of fish in our waters so they will be commensurate with the demands which are being made upon them.

WHERE TO GO FISHING

PENNSYLVANIA WATERS WHICH ATTRACT FISHERMEN

During the fishing season the Board is besieged with requests from all sections of the Commonwealth for information relative to suitable fishing waters.

Believing that these requests should be met the Commissioner of Fisheries, through his long experience, prepared a list of the better known fishing waters in Pennsylvania, which fall into two groups:

1. Trout,
2. Bass, Pike, Pickerel and Muscallonge.

He has this to say as a foreword:

I have not attempted to list every stream, pond or lake in Pennsylvania, but have taken into consideration only those which are better known, and fished not only by Pennsylvanians but those from many States in the Union. The information is supplied primarily for those desiring to take a two or three day trip, and not be bothered by looking up streams or waters upon their arrival at the fishing grounds.

Naturally there are thousands of miles of good fishing water which cannot be listed as space would not permit, but the information supplied will assist the fishermen who have been planning a trip, not knowing where to go, or just how to get there.

I would suggest that sometime during the fishing season you take a trip really worth while by spending several days on some of the well known waters. I can assure you, you will find excellent highways wherever you choose to go, the scenery is unsurpassed, camping conditions are ideal, and the waters are those which for years have afforded the best fishing in the Commonwealth.

There are, I know, two classes of fishermen to satisfy, the bait fisherman, and the fly fisherman. The bait fisherman has as many thrills as the fly fisherman, and of course, gets much more fishing, as he has practically the entire season, while the fly fisherman seldom strikes good weather for trout before the 15th day of May. I feel certain that both the bait and fly fishermen will find sport a-plenty in the waters which I have listed.

I might say that you will find as good streams in one section of the Commonwealth as another. I do not think that the fishermen can make a mistake by going to any of the counties mentioned.

TROUT

I know of no more beautiful water than the Loyalsock Creek in Lycoming County, especially that portion from Bear Creek to the headwaters. This section is fished by thousands and the scenery on both sides cannot be equalled.

Where is the trout fisherman who hasn't fished Big Spring in Cumberland County, which flows through Newville. This has always been one of the most favored trout streams in Pennsylvania and articles recently have been written by many of the New York and Philadelphia papers recommending that trout fishermen go to this stream. It is ideal for fly fishing and can be reached via Pennsylvania Railroad at Newville. It takes a skillful fisherman to catch any number of trout in this stream. It has been heavily stocked and there are many trout to be caught, but it is a stream which is peculiar and furnishes abundant food. The fisherman must catch them when they are in the mood for striking the fly.

It is needless for me to say anything in reference to Centre County. Both fishermen and hunters know what excellent opportunities there are in this county for fish and game.

Tioga and Potter Counties have been a fisherman's paradise for many years. Fishermen will readily recognize many familiar streams in Carbon, Monroe, Northampton, Lehigh, Wayne, Pike, Clinton and other counties.

BASS

Bass fishing is to be found in more than half the counties of the State. In my opinion there are few bass waters in the United States which can equal the North Branch of the Susquehanna River from Falls, Wyoming County to the New York State Line. On this nine mile stretch is found some of the best bass fishing in the country.

Other famous bass fishing waters will be found in the Upper Delaware, French Creek, Crawford and Venango Counties; Brocks Run, Warren County; Lake Gordon, on the line between Pennsylvania and Maryland, and Lake Erie.

Of course, fishermen should not forget Lake Wallenpaupack, which is the largest body of water within the confines of the Commonwealth.

If any fisherman desires specific information in certain localities where he might find accommodations, I would be very glad to send him to one of our Offices in that particular district who would please to furnish him information available as to accommodations.

The following list gives the names of streams, species and nearest towns from which the fishing waters can be reached, is submitted for your choice:

TROUT**Adams County**

Headwaters Conewago Reached from Arendtsville
Headwaters Marsh Creek Reached from Cashtown
Carbaugh Run Reached from Graeffenburg
Toms Creek Reached from Fairfield

Bedford County

Potter Creek Reached from Loysburg
Beaver Creek Reached from Loysburg
Yellow Creek Reached from Loysburg
Three Spring Run Reached from Loysburg
Keg Run Reached from Loysburg
Cove Creek Reached from Bedford

Blair County

Clover Creek Reached from Williamsburg
Piney Creek Reached from Williamsburg
Riggles Gap Reached from Bellwood
Sandy Run Reached from Bellwood
Shaw Run Reached from Bellwood
Bells Run Reached from Bellwood
Loop Run Reached from Bellwood
Tipton Run Reached from Bellwood
Vanceyoe Run Reached from Tyrone
Bigfill Run Reached from Tyrone
Sink Run Reached from Tyrone

Carbon County

Quakake Creek Reached from Hudsonale or Gerhards
Hayes or Black Creek Reached from Lehigh Tannery or White Haven
Mud Run Reached from Albrightsville
Hickory Run Reached from Lehigh Tannery
Big Lehigh River Reached from White Haven
Mauch Chunk Creek Reached from Mauch Chunk
Big Bear Creek Reached from E. Mauch Chunk
Sawmill Creek Reached from Weissport
Wild Creek Reached from Weissport
Pine Creek Reached from Weissport
Pohopoco Creek Reached from Weissport
Big Creek Reached from Weissport
Stony Creek Reached from Christmans

Drakes Creek	Reached from Christmans
Aquashicola Creek	Reached from Palmerton
Princess	Reached from Palmerton
Fourth Run	Reached from White Haven
Middle Creek	Reached from Kresgeville
Penrose Creek	Reached from Beaver Meadows
Ross Common Creek	Reached from near Windgap

Bradford County

Millstone Creek	Reached from Towanda
Shrader Creek	Reached from Towanda

Centre, Clinton and Lycoming Counties

McElhattan	Reached from Lock Haven
Fishing Creek	Reached from Lock Haven
Lick Run	Reached from Lock Haven or Farrandsville
Hyner Run	Reached from Lock Haven or Hyner
Young Woman's Creek ...	Reached from Lock Haven or North Ben
Kettle Creek	Reached from Westport
Baker Run	Reached from Lock Haven
Mill Run	Reached from Lock Haven
Pine Creek	Reached from Jersey Shore
Little Pine Creek	Reached from Waterville
Big Run	Reached from Lock Haven or Montic
Spring Creek	Reached from Bellefonte
Lycoming Creek	Reached from Williamsport
Loyalsock Creek	Reached from Montoursville
Penns Creek	Reached from Lemont or Colburn
Six Mile Run	Reached from Philipsburg
Black Moshannon	Reached from Philipsburg
Lt. Fishing Creek	Reached from Pleasant Gap

Chester and Montgomery Counties

Valley Creek	Reached from Paoli
Pigeon Creek	Reached from So. Pottstown
Rock Run	Reached from So. Pottstown
Birch Run	Reached from Coatesville
Two Log Run	Reached from Coatesville
Logan Run	Reached from Unionville
Hood Run	Reached from Chatham
White Clay	Reached from Chatham

Cumberland County

Green Spring	Reached from Newville
Big Spring	Reached from Newville
Headwaters Yellow Breeches	Reached from Huntsdale
Letort Spring	Reached from Carlisle
Trindle Spring	Reached from Hogestown
Boiling Spring	Reached from Boiling Springs
Mountain Creek	Reached from Mt. Holly Springs
Cedar Run	Reached from Frogtown
Cockleys Run	Reached from Rose Garden

Dauphin and Lebanon Counties

Hammer Creek	Reached from Lebanon to Ephrata by auto
Manada Creek	Reached from Harrisburg to Manada Gap by auto
Indiantown Creek	Reached from Harrisburg to Jonestown by auto
Spring Creek	Reached from Hershey
Millback Creek	Reached from Sheridan
Stoney Creek	Reached from Dauphin
Clarks Creek	Reached from Dauphin

Fayette County

Beaver Run	Reached from Confluence
Little Sandy	Reached from Confluence
Big Sandy	Reached from Confluence

Forest County

Lt. & Big Hickory Creek ...	Reached from East Hickory
Bear Creek	Reached from Marienville
Pen Run	Reached from Marienville
Lt. & Big Coon Creek	Reached from Colanza
Lt. & Big Salmon Creek ...	Reached from Kellettville

Franklin County

Dickeys Run	Reached from Mercersburg
Falling Spring	Reached from Chambersburg
Conococheague Creek	Reached from Greencastle
Trout Run	Reached from Roxbury
Little Antietam	Reached from Waynesboro
Red Run	Reached from Waynesboro
Rocky Mountain Creek	Reached from Caledonia Park

Huntingdon County

Warriors Run Reached from Warriors Mark
 Spruce Creek Reached from Spruce Creek
 Big Laurel Run Reached from McAlevy's Fort
 Detwiler Run Reached from McAlevy's Fort
 Little Laurel Run Reached from McAlevy's Fort
 Croyel Run Reached from McAlevy's Fort
 Headwaters Stone Creek .. Reached from McAlevy's Fort
 Headwaters Shaver Creek .. Reached from McAlevy's Fort
 Garner's Run Reached from Neff's Mills
 Globe Run Reached from Neff's Mills
 E. Br. Stone Creek ... Reached from Huntingdon

Lackawanna County

Roaring Brook Reached from Moscow
 Lehigh Reached from Gouldsboro
 Spring Brook Reached from Spring Brook
 corners, about 4 or 5 miles from Moscow
 Station.

Lehigh County

Little Lehigh Creek Reached from Allentown
 Trout Creek Reached from Allentown
 Cedar Creek Reached from Allentown
 Jordan Creek Reached from Helfrichs Spring
 Saucon Creek Reached from Lanark
 Spring Creek Reached from Trexlertown

McKean County

East & West Branch
 Tuneungwant Creek Reached from Bradford
 Sugar Run Reached from Bradford
 Willow Creek Reached from Bradford
 Chappel Fork Reached from Bradford
 Skinner Creek Reached from Pt. Allegheny
 Comes Creek Reached from Pt. Allegheny
 Marvin Creek Reached from Smethport
 Potato Creek Reached from Smethport
 Scaffold Lick Reached from Liberty
 Annin Creek Reached from Turtle Point
 West Clarion Creek Reached from Mt. Jewett
 Seven Mile Run Reached from Clarion
 Five Mile Run Reached from Clarion
 Salt Works Brook Reached from Gardeau
 Parker Run Reached from Gardeau

Mifflin County

Granville Run Reached from Lewistown
 Singles Run Reached from Lewistown
 Stone Creek Reached from Lewistown

Monroe County

Tobyhanna Creek Reached from Tobyhanna
 Broadheads Creek Reached from Analomink
 Tunkhannock Creek . . . Reached from Nicholson
 Big Bushkill Creek Reached from Pecks Pond
 Leavitt's Branch Reached from Canadensis
 Buckhill Creek Reached from Canadensis
 Spruce Cabin Creek Reached from Canadensis
 Goose Pond Run Reached from Canadensis
 Stony Run Reached from Canadensis
 Paradise Creek Reached from Henryville
 Broadheads Creek Reached from Stroudsburg
 Shawnee Creek Reached from Delaware Water Gap
 Cherry Creek Reached from Saylorsburg
 Pocono Creek Reached from Tannersville
 Scott Run Reached from Scott Run
 Swift Water Creek Reached from Swift Water
 Little Tunkhannock Reached from Naomi Pines
 Big Tunkhannock Reached from Long Pond
 Tobyhanna Reached from Tobyhanna
 Michaels Creek Reached from Broadheadsville
 Pensyl Creek Reached from Appencelle

Northampton County

Big Bushkill Creek Reached from Easton
 Greenawalts Creek Reached from Ackermansville
 Saucon Creek Reached from Hellertown
 Monocacy Creek Reached from Bethlehem
 Hoekendauqua Reached from Point Phillips
 Catasaqua Reached from Catasaqua

Pike County

Raymondskill Five miles from Milford
 Dwarfkill Garvill Bridge on Dark Swamp Road
 Vandermark Reached from Milford
 Deep Brook Reached from Milford
 San Vantinbrook Five miles from Milford by Car to Boslers
 Pond

Dingmans Brook Reached from Dingmans Ferry
 Mill Rift Brook Reached from Mill Rift
 Cummins Brook Three miles east of Milford
 Shohola Brook Shohola Falls, north west of Milford
 Taylor Brook Reached from Greeley
 Bushkill Reached from Bushkill

Potter and Tioga Counties

Pine Creek Reached from Ansonia
 W. Br. Pine Creek Reached from Galeton
 Little Kettle Creek ... Reached from Galeton
 Lyman Run Reached from Galeton
 Genesee Fork Reached from Galeton
 Nine Mile Run Reached from Galeton
 E. Fork Sinnemahoning ... Reached from Wharton & Hull
 First Fork Sinnemahoning . Reached from Costello
 South Fork Sinnemahoning . Reached from Costello
 Mill Creek Reached from Coudersport
 Allegheny River Reached from Coudersport
 Oswage Creek Reached from Shinglehouse
 Honeoye Creek Reached from Shinglehouse
 Slate Run Reached from Slate Run
 Cedar Run Reached from Cedar Run
 Kettle Run Can be reached by road only
 Stopping place Oleona.

Schuylkill County

Negro Hollow Run Brandonville
 Girard Manor Dam Brandonville
 Lofly Brandonville
 Davis Run Brandonville
 Sandy Run Brandonville
 Brandonville Dam Brandonville
 Stoney Creek Reached from Ferndale Station
 Girard Dams Nos. 5 & 6 ... Reached from Ringtown
 Owl Creek Reached from Tamaqua

Sullivan County

Little Loyalsock Reached from Dushore
 Lick Creek Reached from Dushore
 Elk Creek Reached from Dushore
 Glass Creek Reached from Dushore
 Shoenerberg Creek Reached from Dushore

Susquehanna County

Headwaters Tunkhannock Cr Reached from Nicholson

Venango County

Hemlock Creek Reached from President
 Porkey Run Reached from President
 Pithole Creek Reached from Eagle Rock
 Tarkhill Creek Reached from Van
 Stewart Run Reached from Baum
 Cherry Run Reached from Plumer
 North Sandy Reached from Polk
 South Sandy Reached from Polk
 Upper Two Mile Reached from Reno
 Lower Two Mile Reached from Venango
 Patchel Run Reached from Franklin
 Dennison Run Reached from Pearl P. O.

Warren County

Headwaters Tionesta Creek . Reached from Clarington
 Wildcat Creek Reached from Clarington
 Farnsworth Creek Reached from Clarington
 Four Mile Run Reached from Clarington
 Six Mile Run Reached from Clarington
 Upper & Lower Sheriff ... Reached from Clarington
 Browns Run Reached from Clarington

Wayne County

Middle Creek Reached from Gravity
 Wagner Creek Reached from Gravity
 Gumis Creek Reached from Gravity
 Wild Brook Reached from Gravity
 Five Mile Creek Reached from Lake Ariel
 Peet Creek Reached from Lake Ariel
 Winding Hill Creek Reached from Lake Ariel
 Moss Hollow Creek Reached from Salem or Hamlin
 W. Br. Paupack Reached from Salem or Hamlin
 James Creek Reached from Salem or Hamlin
 Butternut Creek Reached from Salem or Hamlin
 E. Br. Paupack Reached from Newfoundland
 S. Br. Paupack Reached from Newfoundland
 Angles or Mill Creek Reached from Newfoundland
 Lehigh Creek Reached from Gouldsboro
 Lackawaxen Creek Reached from Aldenville

Johnson's Creek Reached from Pleasant Mount
 W. Br. Mast Hope Reached from Beachlake
 N. Br. Calkins Reached from Milanville
 S. Br. Calkins Reached from Milanville
 Colley Creek Reached from Lookout
 Little Equinunk Reached from Lookout
 Starrucca Creek Reached from Starrucca
 Little Starrucca Creek Reached from Starrucca
 Big Equinunk Reached from Equinunk
 E. Br. Equinunk Reached from Equinunk
 W. Br. Equinunk Reached from Equinunk

Westmoreland County

Indian Creek Reached from Indian Creek Station
 White Oak Run Reached from Ligonier
 Laurel Run Reached from Ligonier
 McGinness Run Reached from Ligonier
 Laurelhanna Reached from Ligonier

Wyoming County

Mehoopany Creek & Six of
 Its Branches Reached from Mehoopany

BASS AND OTHER SPECIES

Adams County

Bermudian Creek Bass York Springs
 Conewago Creek Bass New Oxford
 Marsh Creek Bass Gettysburg
 Rock Creek Bass Gettysburg

Beaver County

Little Beaver Creek Bass Darlington
 Connoquenessing Bass Ellwood City
 Brush Creek Bass Rochester

Bedford County

Raystown Branch Bass-Salmon-Pike Bedford
 Lake Gordon Bass-Salmon-Pike Bedford
 Dunning's Creek Bass-Salmon-Pike Bedford
 Brush Creek Bass-Salmon-Pike Everett

Blair County

Juniata River Bass-Salmon-Pike Williamsburg
 Bald Eagle Creek Pike-Perch Bald Eagle Station

Bradford County

Cooks Pond Pickerel Towanda
 Lake Wesauking Pickerel-Bass Towanda
 Tunkhannock Creek Bass Tunkhannock
 Sugar Creek Bass Towanda
 Towanda Creek Bass Towanda
 Wyalusing Creek Bass Wyalusing
 Susquehanna River Bass Sayre

Bucks County

N. E. Perkiomen Bass Sellersville
 Neshaminy Bass New Britian
 Tohickon Pickerel Kellorsville

Carbon County

Nesquehoning Creek Bass Hauto
 Hauto Dam Bass Hauto

Centre County

Bald Eagle Creek Bass-Pike Port Matilda
 Bald Eagle Creek Pickerel Bellefonte

Cambria County

Wilmore Dam Bass-Pike Wilmore Dam

Chester County

Buck & Doe Run Bass Coatesville
 West Brandywine Bass Coatesville
 East Brandywine Bass Downingtown
 Marsh Creek Bass Downingtown
 Octorora Creek Bass Oxford
 Pickering Creek Bass Oxford
 French Creek Bass Aldham Station
 Koaline Quarry Holes Bass Brandywine Summit
 Avondale Quarry Holes Bass Avondale
 Mt. Valley Creek Bass Alton Station

Clinton County

Kettle Creek Bass Westport
 Bald Eagle Creek Bass-Pickerel Lock Haven

Crawford County

French Creek Bass Cambridge
 Spartansburg Lake Bass Spartansburg
 Canaadohta Lake Bass Titusville
 Conneaut Lake Bass Conneaut Lake
 Conneaut Lake Muscallonge Conneaut Lake
 French Creek Muscallonge Meadville

Cumberland County

Conodoguinet Creek Bass Carlisle
 Conodoguinet Creek Pickerel Shippensburg
 Mountain Creek Pickerel Pine Grove
 Yellow Breeches Creek Bass-Pickerel Carlisle

Dauphin County

Swatara Creek Bass Hummelstown
 Susquehanna River Bass Harrisburg
 Wildwood Lake Bass Harrisburg
 Clarks Creek Bass Dauphin

Delaware County

Koaline Quarry Holes Bass Phoenixville

Erie County

French Creek Bass-Muscallonge Mill Village
 Conneaut Creek Bass-Muscallonge Albion
 Elk Creek Bass North Girard

Franklin County

E. Br. Conocoheaque Bass Greencastle
 W. Br. Conocoheaque Bass Mercersburg
 Conodoguinet Creek Bass Newville
 Conodoguinet Creek Pickerel Shippensburg

Greene County

Wheelong Creek Bass Waynesburg
 Ten Mile Creek Bass Mather
 Dunkard Creek Bass Poland
 Youghogheny River Bass Somerfield

Huntingdon County

Raystown Branch Bass-Salmon-Pike Huntingdon
 Stone Creek Bass-Salmon-Pike Huntingdon
 Juniata River Bass-Salmon-Pike Newton Hamilton
 Aughwick Creek Bass-Salmon-Pike Mount Union
 Tuscarora Creek Bass-Salmon-Pike Blairs Mills
 Juniata River Bass Petersburg

Forest County

Tionesta Eddy Bass-Muscallonge Tionesta
 Dawson Eddy Bass-Muscallonge Tionesta

Juniata County

Tuscarora Creek Bass-Pike Port Royal
 Juniata River Bass

Lackawanna County

Bailors Lake Bass-Pickerel Dalton
 Johnson Pond Bass-Pickerel Gouldsboro
 Snag Pond Bass-Pickerel Gouldsboro
 Lake Sheridan Bass-Pickerel Factoryville
 Lake Winola Bass-Pickerel Factoryville
 Susquehanna River Bass Ranson
 Fords Pond Bass Clarks Summit
 Gravel Pond Bass Clarks Summit

Lancaster County

Susquehanna River Bass Columbia
 Lt. Conewago Creek Bass Elizabethtown

Lawrence County

Lt. Beaver Creek Bass Darlington
 Connoquenessing Bass Ellwood City
 Slippery Rock Creek Bass-Muscallonge

Lebanon County

Little Swatara Bass-Pike Jonestown
 Stracks Dam Bass-Pike Myerstown
 Sovers Dam Bass-Pike Lebanon
 Waterhouse Dam Sunfish-Catfish ... Annville

Lycoming County

Little Pine Creek Bass-Pickerel Waterville
 Pine Creek Bass-Pickerel Ansonia

McKean County

Allegheny River Bass Eldred
 Oswayo Creek Bass Ceres, N. Y.
 Kinzua Creek Bass Kinzua

Mifflin County

Juniata River Bass-Salmon-Pike Newton Hamilton

Montgomery County

N. E. Perkiomen Bass Morwood
 East Swamp Bass Sumneytown
 Deep Creek Bass Green Lane
 Ridge Valley Pickerel Spring Mount
 Perkiomen Bass-Pickerel Spring Mount

Monroe County

No. Jersey Pond Pickerel Gouldsboro

Perry County

Shermans Creek Bass Duncannon
 Juniata River Bass

Pike County

Sawkill Pond Pickerel Milford
 Walker Lake Pickerel Milford
 Westalong Pickerel Westalong
 White Deer Lake Pickerel Hawley
 Promise Land Pond Pickerel Hawley
 Pecks Pond Pickerel Hawley
 Billings Pond Pickerel Lords Valley
 Big Mud Pond Pickerel Bushkill
 Little Mud Pond Pickerel Dingmans Ferry
 Lt. Tinkwig Pond Pickerel Hawley
 Routs Pond Pickerel Hawley
 Shohola Dam Pickerel Shohola
 Delaware River Pike-Bass Bushkill
 Lake Tammant Pickerel-Bass Bushkill
 Little Twin Lakes Pickerel-Bass Milford
 Big Twin Lakes Pickerel-Bass Milford
 Fairview Twin Lakes Pickerel-Bass Hawley
 Ecks Pond Pickerel-Bass Hawley

Potter County

Kettle Creek Bass Cross Fork

Schuylkill County

Tumbling Run Dam Bass Pottsville
 Greenwood Dam Bass Hauto
 Hauto Dam Bass Hauto
 Lakeside Dam Bass E. Mahanoy Jet
 Koenigs Creek Bass New Ringgold
 Indian Run Bass New Ringgold
 Lake Hall Bass Pine Grove

Snyder County

Middle Creek Bass Selinsgrove
 Penns Creek Bass Lewisburg

Susquehanna County

Keeney Pond Pickerel Laceyville

Tioga County

Marsh Creek Pickerel-Bass Ansonia
 Pine Creek Pickerel-Bass Ansonia

Union County

Penns Creek Bass Lewisburg

Venango County

Allegheny River Bass-Muscallonge Oil City
 Pump House Eddy Bass-Muscallonge Oil City
 Oliopolis Eddy Bass-Muscallonge Oil City
 Rockmere Eddy Bass-Muscallonge Rockmere
 Walnut Bend Eddy Bass-Muscallonge Walnut Bend
 Henrys Bend Eddy Bass-Muscallonge Henrys Bend
 Eaglerock Eddy Bass-Muscallonge President
 President Eddy Bass-Muscallonge President
 Baum Eddy Bass-Muscallonge President
 French Creek Eddy Bass-Muscallonge Franklin
 Brandons Ferry Bass-Muscallonge Brandons Ferry

Warren County

Little Brokenstraw Bass Pittsfield
 Big Brokenstraw Bass Pittsfield

Washington County

Buffalo Creek Bass Claysville

Wayne County

Lake Ariel	Bass-Pickerel	Lake Ariel
Louglin Pond	Bass-Pickerel	Lake Ariel
Keen Pond	Bass-Pickerel	Waymart
Beech Lake	Bass-Pickerel	Honesdale
Poyntelle Lake	Bass-Pickerel	Poyntelle
Little Hickory	Bass-Pickerel	Poyntelle
Big Hickory	Bass-Pickerel	Poyntelle
Spruce Lake	Pickerel	Poyntelle
Little Beech	Pickerel	Honesdale
Perkins Pond	Pickerel	Honesdale
Bunnell Pond	Pickerel	Honesdale
Mud Pond	Pickerel	Waymart
Long Pond	Pickerel	Waymart
White Oak	Pickerel	Waymart
Elk Lake	Pickerel	Waymart
Lake Ladore	Pickerel	Lake Ladore
Curtis Pond	Pickerel	Lake Ladore
Hartford Pond	Pickerel	Lake Ariel
Long Pond	Pickerel	Lake Ariel
Millers Pond	Pickerel	Lake Ariel
Kizer Pond	Pickerel	Maplewood
Brunson Pond	Pickerel	Lake Ariel
Hartford Pond	Pickerel	Maplewood
Lake Henry	Pickerel	Maplewood

Wyoming County

Tunkhannock Creek	Bass	Tunkhannock
Susquehanna River	Bass	Falls
Chamberlin Pond	Pickerel	Mehoopany
Jennings Pond	Pickerel	Mehoopany
Nigger Pond	Pickerel	Mehoopany

York County

Big Conewago	Bass	York Haven
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DETAILED REPORT OF THE ACTIVITIES OF THE BOARD**ADMINISTRATIVE ORGANIZATION**

An Administrative Organization Chart as of July 1, 1927 will be found on next page. No major changes have been made in personnel. The two sites purchased for new hatcheries are at present being developed.

STATISTICS

In the back of this report will be found statistical data covering the distribution of fish, number of arrests made by the protection service, catch of fish on Lake Erie, sale of fish and eggs by Commercial Hatcheries, number of licenses issued by counties, etc.

PROPAGATION

The chart showing the Administrative Organization of the Board gives in detail the species of fish propagated and the location of the various hatcheries.

The two sites purchased at Reynoldsdale and Tionesta have been partially developed and the next biennium should see the original layout completed. The addition of these two new hatcheries will greatly increase the output of the Board. The improvements at the several hatcheries which have been under way during the last biennium were practically completed. These improvements have made it possible to hold practically all species of fish until they are of a size where they will be able to care for themselves. Attention is called to the size and age of the fish now propagated as shown in the distribution statements on Pages 97 to 102.

During the next biennium one of the serious difficulties in the propagation of fish will be that of the greatly increased cost of food, particularly the scarcity of trout food which is principally liver.

Recent medical discoveries are responsible for this condition—doctors are now prescribing liver in the treatment of various diseases, particularly in the treatment of pernicious anaemia.

This condition has forced the Board of Fish Commissioners for the year 1928 to increase its budget for fish food more than 150 per cent, which means that in 1928 it will spend \$18,000 for fish food where previously \$7,000 was sufficient.

No doubt those who have despised the liver fed trout (before it became acclimated to the stream and fed only on natural food) will

now be highly elated to catch fish which must be fed such select food.

It is well known by fish culturists that trout cannot thrive or exist for any length of time on artificial or prepared foods, examination has shown that while in some instances it has been eaten it does not digest properly, and the mortality of the fish is considerable.

The hope of the Board of Fish Commissioners is that the supply does not become exhausted. Contracts for most of the hatcheries have been completed for the year 1928 and it was found to be rather difficult to receive bids for a full year from most of the large packing houses as they desire to contract for periods of three months owing to the enormous demand.

The major hatchery is located at Pleasant Mount. For the information of the fishermen we are submitting in detail the report of the Superintendent:

Pleasant Mount, Pa.

Honorable N. R. Buller,
Commissioner of Fisheries,
Harrisburg, Pennsylvania.

Dear Sir:

The following is a report of the activities carried on at this Hatchery from June 1, 1927 to May 31, 1928:

Fish Propagation—In laying out the fish cultural work for the year, as with the previous year, we inaugurated a program whereby, no ponds were laying idle for any length of time, thus, greatly increasing the production per unit area. The method of procedure in utilizing certain water areas for the rearing of from one to three crops of fish per year, is fully covered on page fourteen of the Board's Biennial Report for the period ending May 31, 1927.

Of the approximate three hundred-fifty water acres that comprise the Hatchery, approximately two hundred-fifty acres were devoted to the propagation of the black bass and black bass forage. Were it not necessary to utilize so great an area for bass culture, we could have greatly increased the production of other warm water species, such as the yellow perch, catfish, bluegill and minnow.

Fourteen different species of fish were handled throughout the year for distribution purposes. I will briefly cover the work with each species, separately.

Brook Trout—All the brook trout work was carried on at the unit comprising the ponds and buildings on the east and west banks of



HATCHERY BUILDING NO. 1, PLEASANT MOUNT HATCHERY

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the Lackawaxen Creek. Of this area, twenty-eight ponds were utilized during the entire year, and during the fall and winter months, trout were carried in thirty-three of the ponds.

In the spring, all fish over twelve months of age were sorted, and those having attained a size large enough for distribution were disposed of. Thus giving space for the holding of a certain per cent of fry, as well as emptying the areas that are used during the warmer periods of the year for the propagation of warm water fish. In the fall of the year, all the trout were again sorted. The larger sizes being liberated in the public waters and the balance held until they had attained the legal catching size or over. All the available trout holding space was filled up with the second grade trout shipped from the Corry Hatchery, and a number of six months old fish were purchased as they run, from commercial hatcheries. During the winter months, the buildings contained approximately 4,400,000 eggs. The distribution report submitted to you under recent date, will show what disposition was made of this egg crop and the majority of the fry in their early feeding stages, only sufficient fry being retained at the hatchery to fill up the nursery areas.

Brown Trout—For the past few years, very little effort has been made at the Hatchery in the raising of brown trout. However, from fish held over from the previous year, we had a distribution of 15,600, from four to six inch fish. The brown trout eggs that were in the building during the winter were transferred to the Bellefonte Hatchery before the hatching period.

Rainbow Trout—In January we received in exchange for brook trout eggs, a consignment of eyed rainbow trout eggs from the Federal Bureau of Fisheries. Owing to the lack of holding space in the building, these eggs were later transferred to the Bellefonte Hatchery.

Lake Trout—During March the Federal Bureau of Fisheries in exchange for other eggs, shipped to us from Duluth, Minnesota, a consignment of eyed lake trout eggs. The eggs were hatched and the fish retained until the age of five months, then transferred to the Bellefonte Hatchery.

Cisco—During the month of February we received from the Erie Hatchery 2,000,000 eyed cisco eggs, which hatched during the month of March and were liberated in nearby waters.

Pike Perch—The quality of the pike perch eggs received this season, through the cooperative work with the Federal Bureau of Fisheries, was exceptionally fine. The Board's entire crop was carried through on the battery at this hatchery, until they had reached the eyed stage. They were then equally divided among the hatcheries having facilities for the holding of this type of eggs. The eggs that we retained at this



NURSERY PONDS, PLEASANT MOUNT HATCHERY

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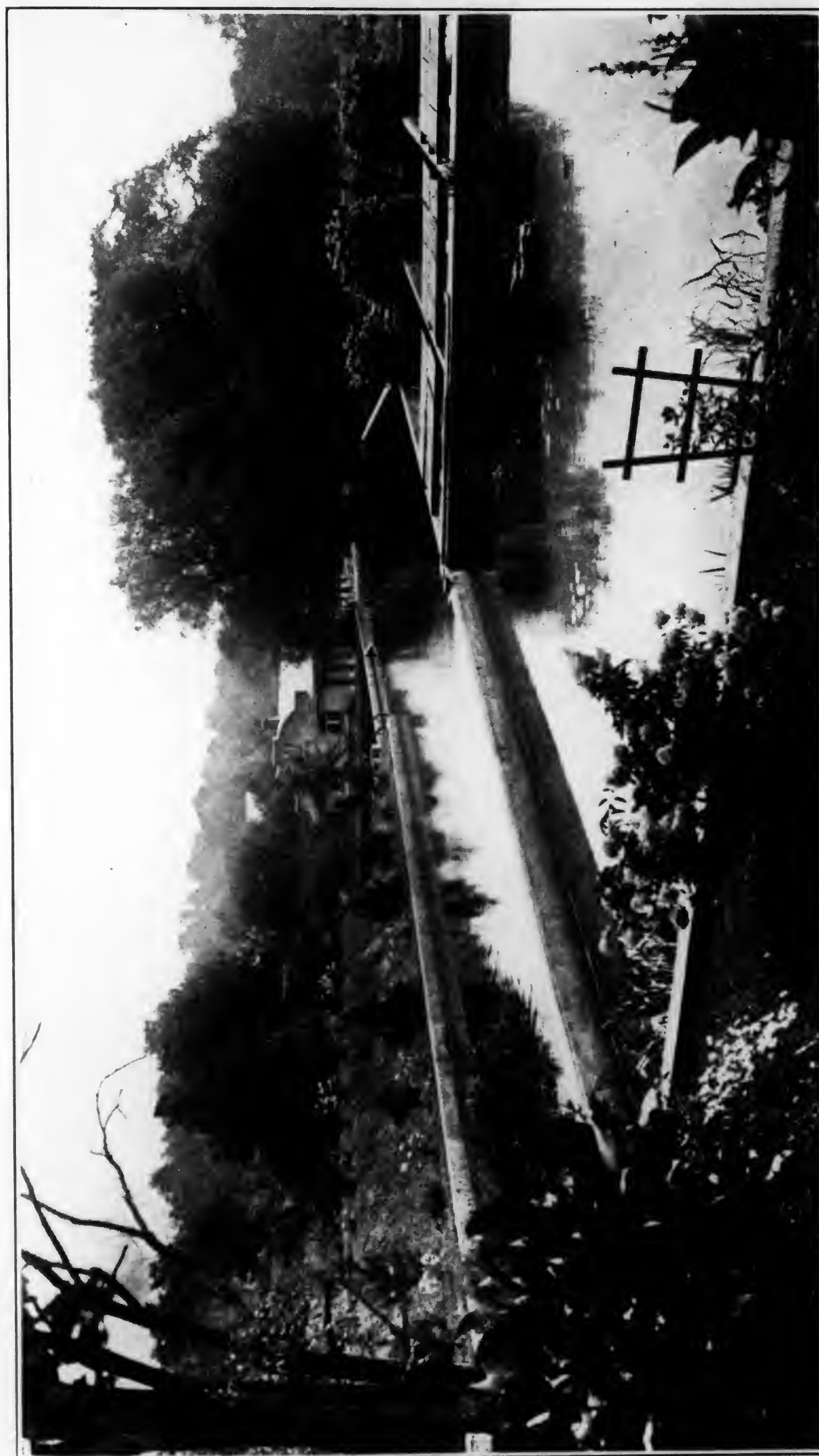
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NURSERY PONDS, PLEASANT MOUNT HATCHERY

hatchery for hatching purposes produced an exceptionally fine lot of strong fish, which were distributed in their first feeding stage. As with the last three years, a number of adult pike perch were taken from Unit Number One and planted in the Wallenpaupack Lake.

Yellow Perch—In my judgment, the propagation of the yellow perch is one of the most important works carried on at this plant. Practically the entire area of Unit Number One is devoted to the holding of selectively bred broodstock, from which the entire egg crop for the Commonwealth is secured. From year to year this stock has been increased, until this spring they produced for artificial culture, 5,132 quarts of eggs. We were greatly assisted in the work of collecting the eggs, in having available for use the new spring spawning pen which the Board permitted us to construct last fall. The entire egg crop was divided among the hatcheries that have facilities for hatching and handling the perch eggs. Of the fish hatched at the Pleasant Mount Hatchery, the great majority were distributed in their first feeding stage. However, a portion of Unit Number Two was utilized for the holding of a number of the baby fish and this fall I am looking forward to a nice distribution of the six months yellow perch.

Sunfish—This season very little space was allotted to the propagation of the bluegill. In the small space allotted to this work the offspring showed a very low mortality and a rapid growth, but owing to the limited area, we did not have as many fish for distribution as some previous years.

Catfish—The work of rearing the catfish this season was rather disappointing, showing the poorest production since this type of fish culture has been undertaken at this plant. About the usual number of fry were transferred from the brood ponds to the nursery areas, but during August the small fish became infected with an external parasite that caused very heavy mortality. This infected area was thoroughly disinfected, and I am not looking for a repetition of this in the coming year.

Pickereel—The number of pickereel of all sizes sent out for distribution this fiscal year, showed a remarkable increase over any previous year, and I do not hesitate to say that this was entirely due to the method of treating the fish, after being handled. Our program necessitated the transfer of these fish from the nursery areas to the holding ponds, in the early fall. Due to the handling of these fish in the high water temperatures, in previous years, the mortality was exceptionally high. Through our method of treating, this loss was greatly reduced.

Goldfish—At the present time we are utilizing no space for the propagation of the goldfish, the fish being shipped to us from other



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Goldfish—At the present time we are utilizing no space for the propagation of the goldfish, the fish being shipped to us from other



NURSERY PONDS, PLEASANT MOUNT HATCHERY

hatcheries. They are used for exhibition purposes and for distribution to our public instructions, such as schools, hospitals, scout headquarters, etc. Also a great number are utilized by the Board in the Bureau of Research, for experimental work.

Black Bass—Greater space is allotted to the propagation of the black bass than is allotted to all other species combined. While this year's record shows a distribution greater with one exception, than any other year, I still feel that in considering the area devoted to this work, there is still room for greater improvement. One great factor that limits the number and size of the bass held for distribution is the forage problem. While the Board has made great progress in the artificial production with certain of the so-called water fleas, which enables us to carry a greater number of fish with less loss, through the *Daphnia* feeding stage, steps must be taken to greatly increase this type of food as well as the forage that they require after reaching the fish feeding or adult stage.

Forage—Thus far, we have been unable to utilize any artificial food that the bass will feed and thrive upon, which follows that all bass held must be furnished with live, natural forage. These foods must be produced at our hatcheries. The propagation of forage is a task requiring as much work and knowledge if not more, than is necessary for the propagation of our game fish. If set-backs are encountered in the raising of any one type of forage crop for the year, it greatly curtails the size and number of bass for distribution and so far, in order to produce what food the bass will consume, it has been necessary to devote as much space to the forage work as we allotted to the direct raising and holding of the bass. At present the three principal live foods utilized are: minnows, larva frogs and water fleas.

Minnows—A number of years were spent in research work to determine what, in our judgment, would be the best type of minnow to utilize for feeding the baby bass, with the result that we have decided upon the golden shiner for this work. A few years ago Unit Number Three was set aside for the raising of the golden shiner. Each year this Unit shows a great increase in the number of small minnows which we utilize for bass food. However, it is needless to say that the production of all type of forage will have to be increased in proportion to the increase of the number of bass retained and held at the hatchery. I might say that this Unit is not producing minnow forage for the adult or brood bass. We feel that if we draw on the adult shiner for the feeding of the brood bass, we might deplete the brood stock of the minnows, with the result that we would lack the minnow for the baby bass. The great majority of the minnow forage utilized by the parent bass is shipped to us from the Torresdale Hatchery.



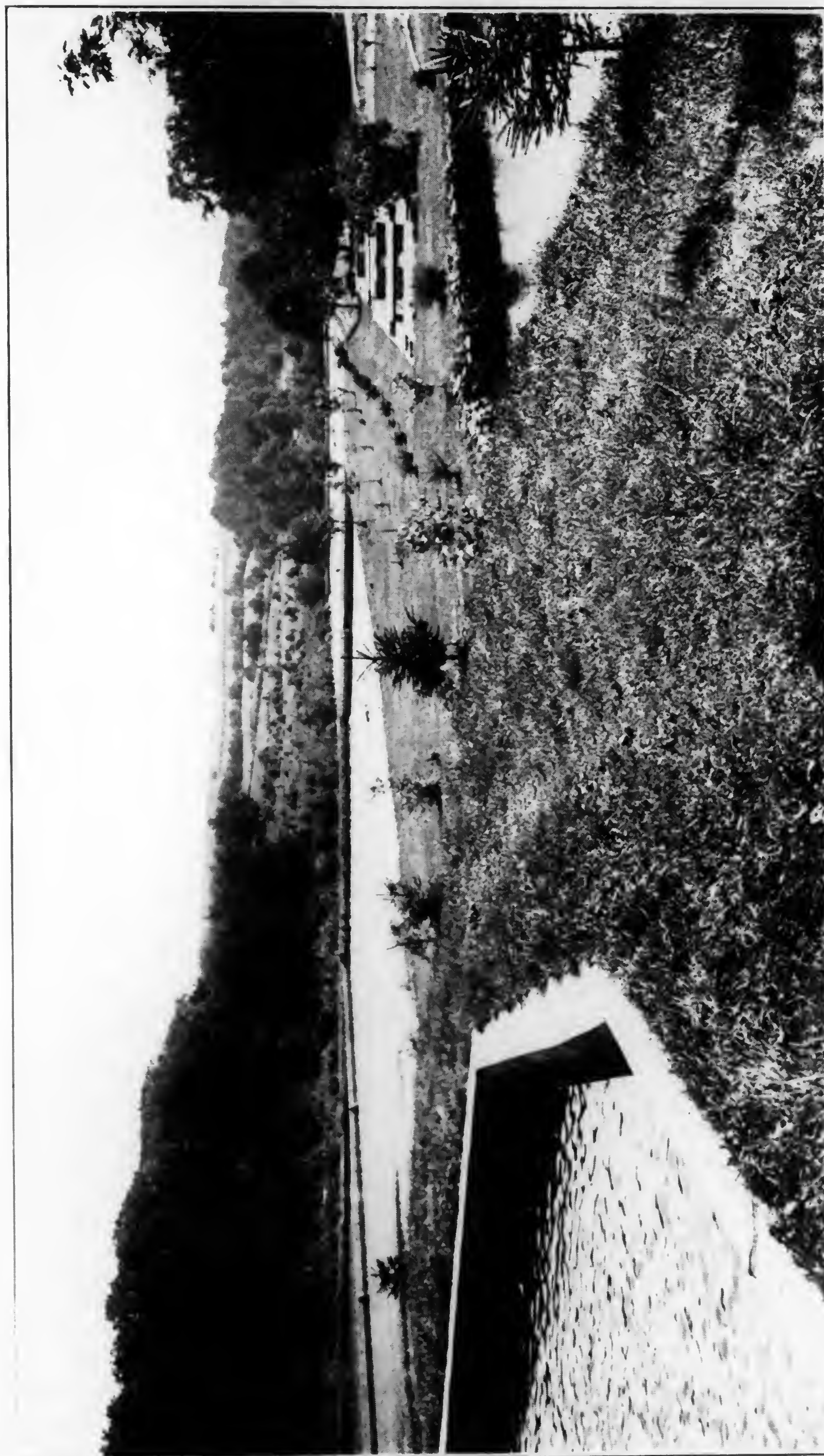
BASS PONDS, PLEASANT MOUNT HATCHERY

hatcheries. They are used for exhibition purposes and for distribution to our public instructions, such as schools, hospitals, scout headquarters, etc. Also a great number are utilized by the Board in the Bureau of Research, for experimental work.

Black Bass—Greater space is allotted to the propagation of the black bass than is allotted to all other species combined. While this year's record shows a distribution greater with one exception, than any other year, I still feel that in considering the area devoted to this work, there is still room for greater improvement. One great factor that limits the number and size of the bass held for distribution is the forage problem. While the Board has made great progress in the artificial production with certain of the so-called water fleas, which enables us to carry a greater number of fish with less loss, through the *Daphnia* feeding stage, steps must be taken to greatly increase this type of food as well as the forage that they require after reaching the fish feeding or adult stage.

Forage—Thus far, we have been unable to utilize any artificial food that the bass will feed and thrive upon, which follows that all bass held must be furnished with live, natural forage. These foods must be produced at our hatcheries. The propagation of forage is a task requiring as much work and knowledge if not more, than is necessary for the propagation of our game fish. If set-backs are encountered in the raising of any one type of forage crop for the year, it greatly curtails the size and number of bass for distribution and so far, in order to produce what food the bass will consume, it has been necessary to devote as much space to the forage work as we allotted to the direct raising and holding of the bass. At present the three principal live foods utilized are: minnows, larva frogs and water fleas.

Minnows—A number of years were spent in research work to determine what, in our judgment, would be the best type of minnow to utilize for feeding the baby bass, with the result that we have decided upon the golden shiner for this work. A few years ago Unit Number Three was set aside for the raising of the golden shiner. Each year this Unit shows a great increase in the number of small minnow which we utilize for bass food. However, it is needless to say that the production of all type of forage will have to be increased in proportion to the increase of the number of bass retained and held at the hatchery. I might say that this Unit is not producing minnow forage for the adult or brood bass. We feel that if we draw on the adult shiner for the feeding of the brood bass, we might deplete the brood stock of the minnows, with the result that we would lack the minnow for the baby bass. The great majority of the minnow forage utilized by the parent bass is shipped to us from the Torresdale Hatchery.



BASS PONDS, PLEASANT MOUNT HATCHERY

Frogs—At our hatcheries the tadpoles of various species of frogs play an important part in helping to provide forage for the adult bass, and throughout the year bushels of them are used for this purpose. The predominating species used being those of the Pickerel and Leopard frogs. In Pennsylvania these two species are not considered edible by this Board. The Pickerel and Leopard frogs are not very aquatic, spending most of their time, other than at the spawning and hibernating periods, on land.

The edible species such as the green and the bullfrog, whose larva are sent out for distribution from some of the other hatcheries for stocking purposes, are very aquatic. At the hatcheries the parent frogs are permitted to roam at will about the property. Bass are enemies of the frog, and at the hatcheries where large bass are retained, the aquatic species instinctively shun the bass ponds, with the result that they soon migrate from the property. Because of this, this hatchery has very few larva frogs of the green and bullfrog species for distribution.

Water Fleas—For the past number of years I have been closely cooperating with the research branch of the Board, in working out a method for the artificial propagation of certain types of *Daphnia*, to be used in the feeding of bass fry. Heretofore, this work has been carried on, on rather a small scale, for the reason that the Bureau of Research was endeavoring to work out a practical method before spending any sum of money for beds, etc. However, I feel that this work has now progressed where the artificial culture of these organisms is a practical success, and last month under the direction of the Research Bureau, I completed the construction of thirty temporary culture beds and I am sure the production from these areas will be a wonderful asset in providing forage for the small bass.

Education—At the present time the Board maintains on the second floor of Hatchery Building Number One, an aquarium having approximately fifty different species of living fish, reptiles and amphibia on exhibition. This exhibition is visited annually by many troops of boy and girl scouts, biology and nature study classes from the nearby schools, and by hundreds of tourists from almost every state, as well as from many foreign countries.

In addition to this, numerous consignments of various species of fish are shipped for exhibition and scientific purposes. The fish for exhibition being consigned to such institutions as public parks, public aquariums, hospitals, etc. The fish for scientific purposes are generally consigned to the Biology Departments of our numerous institutions of learning.

Transportation—At the present time the Board has in operation a



INTERIOR OF SHIPPING ROOM
HATCHERY BUILDING No. 2, PLEASANT MOUNT HATCHERY

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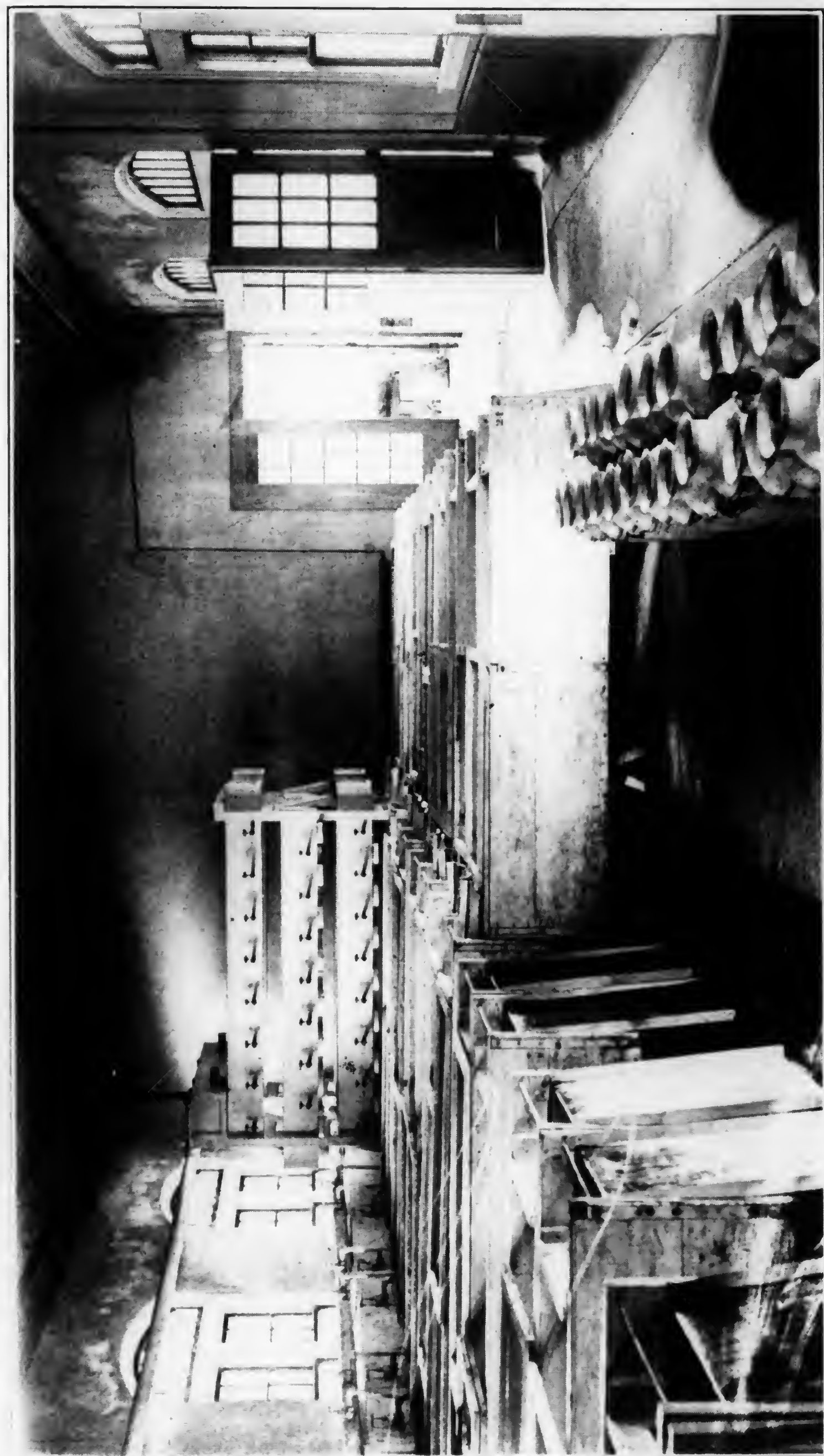
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INTERIOR OF SHIPPING ROOM
HATCHERY BUILDING NO. 2, PLEASANT MOUNT HATCHERY

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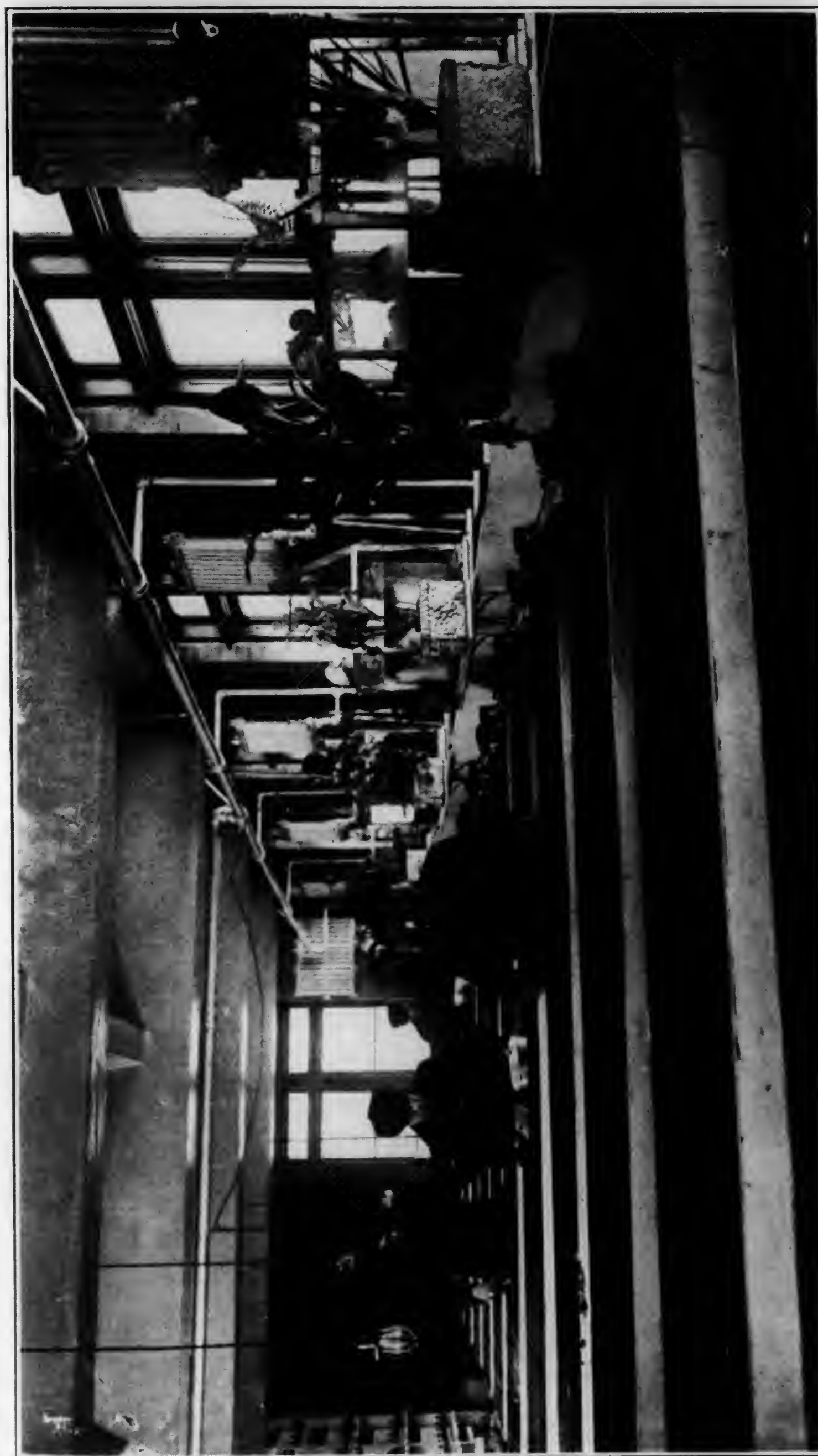
Maintenance—The principal work in maintaining the ponds, buildings and equipment on the property consisted of painting and repairing the roof of the store-house, workshop and garage; patching the concrete pond walls; resurfacing the driveway; painting and stenciling all shipping cans, approximately 1500 in number, as well as the egg shipping cases, boats, live cars, etc.

New Equipment Purchased—The inventory for the fiscal year will show the list of all new equipment purchased. In this report I will only mention the major items. This equipment consists of 498 aluminum transportation pails, 320 of which were transferred to the Corry and Bellefonte Hatcheries; 100 galvanized transportation pails and one incinerator used for the disposal of refuse from the pond and meat house.

Construction—The construction work consisted of the grading around three cottages, located on the south side of the highway. Grading the areas located between the highway and Pond Number One. The construction of thirty Daphnia beds at the head of Unit Number Two for the Bureau of Research. A modern disposal plant, for caring for the liquid refuse from the meat house. The construction of a perch spawning bed at Unit Number One. The rebuilding of a water intake in the creek, for the purpose of furnishing water for Hatchery Building Number Two and the Aqueduct. The old intake did not have sufficient screening capacity to care for the additional draining put upon it by taking from this source and supply Hatchery Building Number Two and an additional eight-inch pipe of water to the Aqueduct. Furthermore, the old intake was somewhat of a menace during time of flood. We feel that the new structure is of ample size to carry all flood waters and the screen intake large enough to care for all future development.

During the winter the Unit comprising all buildings and areas on the east and west side of the Lackawaxen Creek, was electrified. This consisted of the wiring or rewiring of all buildings; the installation of twenty-six outside bracket lights, and two flood lights at various intervals along the pond banks. The power in the pumping plant was changed from steam to electric and the feed grinding machine was changed from gasoline to electric.

Recommendations—That the wood work on all buildings be painted. That the water intake at the head of Pond No. 27 be reconstructed, so



TROUT TROUGHS, INTERIOR OF HATCHERY BUILDING No. 1, PLEASANT MOUNT HATCHERY

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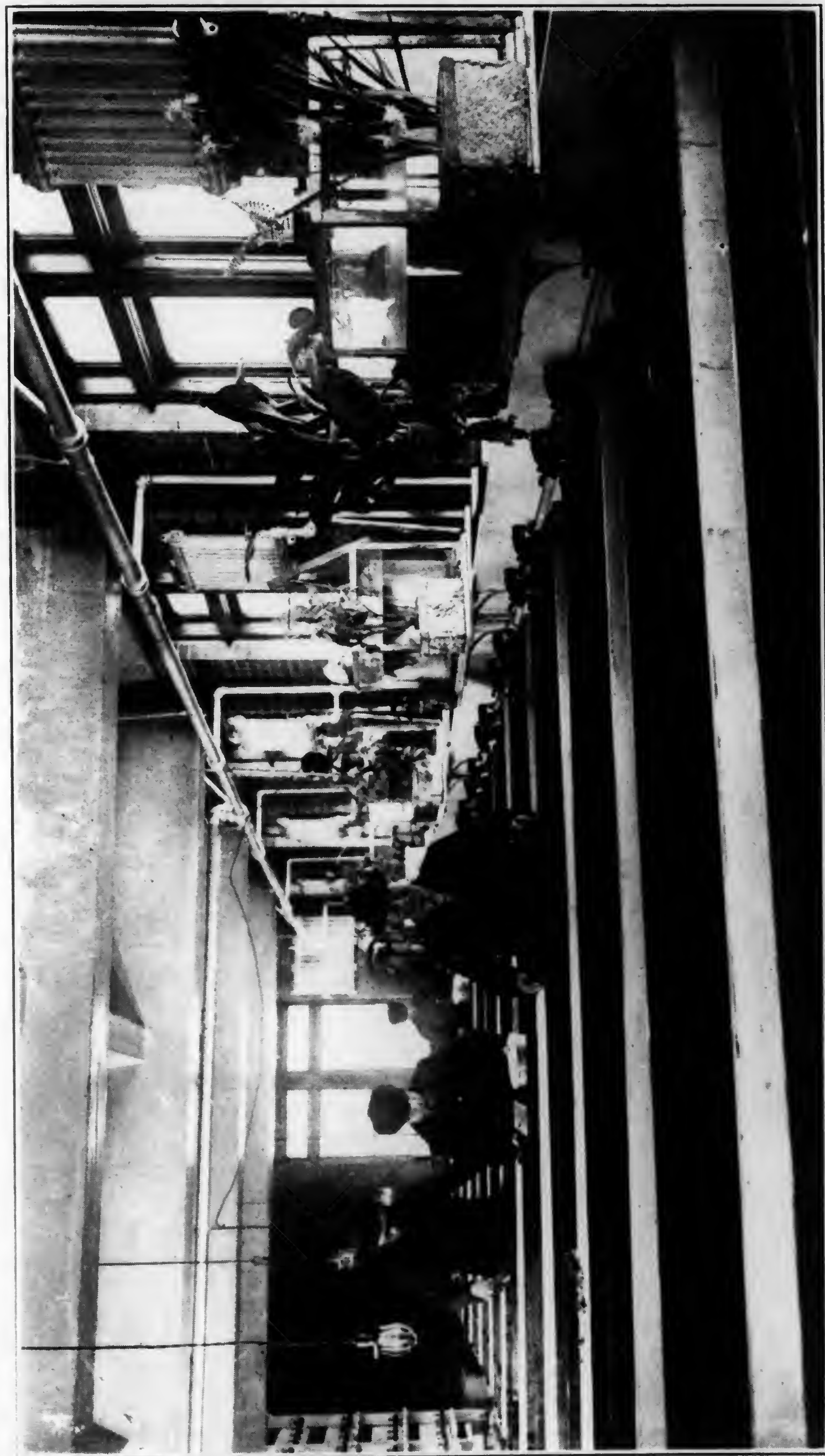
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STRIPPING THE FEMALE BROWN TROUT



STRIPPING THE MALE BROWN TROUT

as to greatly increase the intake screen area and to lessen the flood menace. That repairs be made on the forage areas that will enable the maintenance of more even water levels. That a new motor-boat be purchased, to replace the one that has been in service over a period of ten years. The old boat is in a very dangerous condition at the present time, and in our judgment is beyond repair. That a more modern pumping equipment be installed in the pumping station. The pump now in use has been in service approximately twelve years. Its maximum capacity is 123 gallons of water per minute. With modern pumping equipment I feel sure that this will produce from three hundred to five hundred gallons of water per minute, with no additional cost of operation. I feel sure that the increase in the rate of growth of the trout in this type of water, as compared to the creek water will pay for the new installation in one season. That the area east of Hatchery Building No. 2 and north of the highway be graded and seeded.

Very truly yours,

G. W. BULLER,
Superintendent

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The public little realizes the many difficulties which have to be met in distributing fish to the streams and waters throughout the Commonwealth.

It means that schedules must be maintained during the shipping season whether shipments are made by truck or railroad, and that these fish must be delivered to the applicant within a certain period





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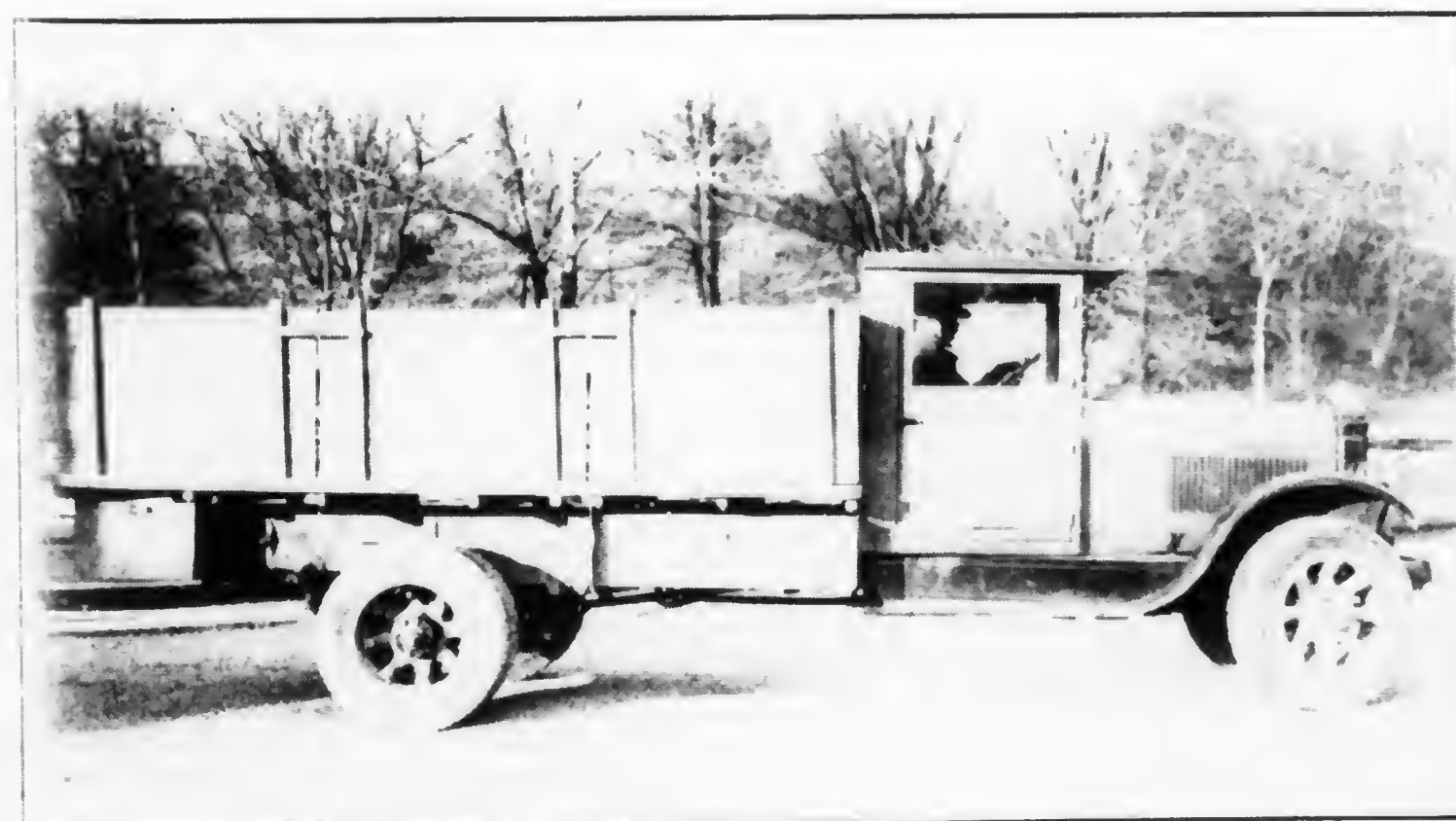
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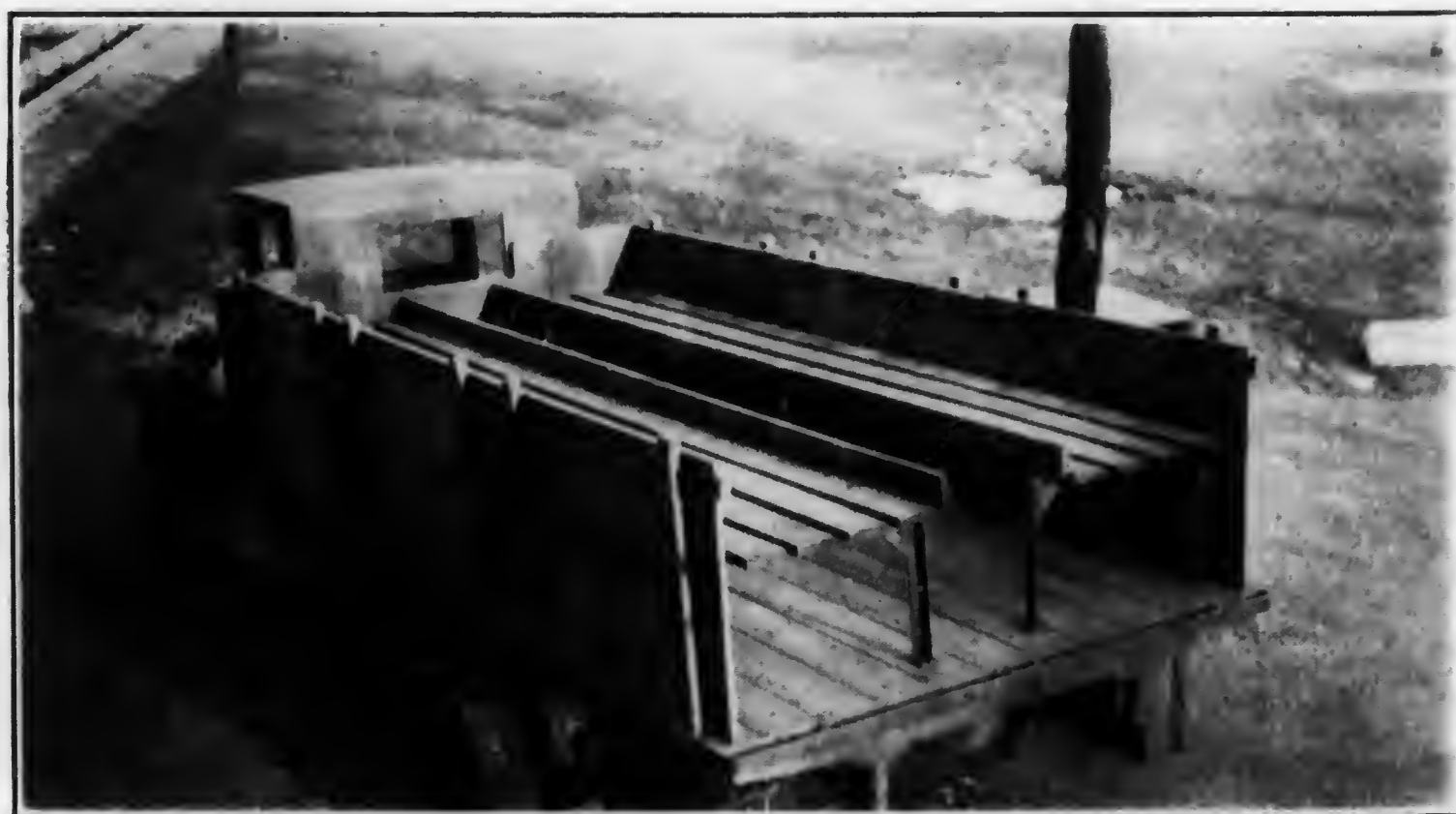
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which is oftentimes much shorter than it should be for the amount of work involved. The superintendent of the hatcheries and their messengers must be given due credit for their valuable services in this connection.



Probably one of the outstanding accomplishments during the bien-nium was the purchase of a fleet of trucks for the distribution of fish. This was made necessary owing to the restrictions which have been placed on many trains and the discontinuance of local trains on many of the branches. These conditions made it imperative that the Board find some other method of distribution.



For the information of the public the Board is reproducing several cuts showing the type of truck being used, the construction of the body, and the pails for carrying the fish. The trucks are arranged with double carriers which carry eighty (80) pails. The regular Fearnow fish pail with a wholly enclosed top of finely perforated holes is being used. The capacity of the pails is twenty (20) quarts of water to the overflow. In using this type of pail it is possible to carry twice the number previously carried, supporting equally as many fish as the larger cans. The longest schedule now maintained is about three hundred miles, making a fifteen hour drive, up to this time distribution has been made in perfect safety for the fish. When the weather is hot, the tops of the pails are inverted and filled with ice, a tarpaulin cover going over the ice which makes it possible to make long trips in safety. The day is not far distant when practically all distribution will be made by truck. We have found that it is most satisfactory and you can govern every shipment which is being sent out. Naturally there are times when break-downs occur and the fish are never lost because they are placed in some stream in the immediate vicinity. This condition also had to be met when shipping by rail, as oftentimes a wreck occurred or a shipment was held up behind a wreck.

Distribution for the year 1926 and 1927 by counties is shown in the statements on Pages 97 to 102. Taking into consideration the size and age of these fish real progress is shown.



COOPERATIVE NURSERIES

In cooperation with the United States Bureau of Fisheries several Associations and Clubs throughout the Commonwealth are operating cooperative nurseries. The majority of these cooperative nurseries have been started during the last biennium. They are no doubt doing fine work. In some instances the Board has been requested to furnish trout fry.

The Board of Fish Commissioners is only distributing trout of a legal size and in following out its program no fry could be furnished for projects of this kind. We have this to say on the cooperative nursery:

The Board of Fish Commissioners propagates all fish at major hatcheries, which have been constructed for this purpose, as the artificial propagation and raising of fish is a technical one and can only be successfully carried on by competent fish culturists.

The Board's hatcheries are all equipped with the latest appliances, and the development of the plant has been with a view of distributing to the waters in which the public are allowed to fish, only those fish which would be of a size suitable to care for themselves, particularly the trout, bass, sunfish, catfish, yellow perch, etc. In constructing its hatcheries, the Board also had in mind that they would be in continuation many years to come.

In making the above statement the Board does not condemn the cooperative nurseries as now operated in conjunction with the U. S. Bureau of Fisheries but insofar as it is concerned, does not believe it would be good policy for the State of Pennsylvania to adopt any program of this kind, as it is much better for the Board of Fish Commissioners to raise their fish to a size suitable for the streams than to attempt to send out small fry and place the burden upon the sportsmen.

From observations the Board of Fish Commissioners believes that fishermen become over-enthusiastic on propositions of this kind and when they are asked from time to time to reach down in their pockets for money to start these cooperative nurseries they begin to lose enthusiasm and it is only a short time until the projects are abandoned.

This Board has been doing everything possible in cooperation with the U. S. Bureau of Fisheries and we have given the operators of the different nurseries protection by closing their property, furnishing posters which protect them from trespass, and issuing the proper permits for the transfer of any fish to the waters in which the public is allowed to fish.

FISH PONDS FOR THE LAND OWNER

Many inquiries are received at the office of the Board of Fish Commissioners from parties seeking information on the construction and maintenance of private fish ponds. It is the policy of the Board to lend every assistance possible towards this work. Upon request engineers are sent to make suggestions and give advice in reference to the construction. Fish cultural advice is given with reference to the stocking and maintenance of the pond. In addition to this, upon written request to the Harrisburg Office, pond owners are furnished with a fish cultural application which, when properly filled out and returned, will secure for a start in the new pond those species of fish which cannot conveniently be purchased from commercial hatcheries, and which are usually best suited for the pond owners.

Privately owned ponds can be made not only a source of food supply for the family use, but in many instances where time and study is given the venture, a supply of fish will be available for market purposes. If due care is given to the planting of the pond with aquatic vegetation and beautifying the surrounding landscapes, it may be made a place of rest and comfort for the grownups as well as a place of recreation for the little folks and in many instances may provide a handy place for securing the winter crop of ice.

As no two ponds or pond sites are identical, no fixed set of rules can be laid down for their construction and maintenance.

Since the last biennial report the Board has published a bulletin covering this subject and it can be secured upon application to the Board of Fish Commissioners, Harrisburg, Pennsylvania.

FIELD SERVICE

Each year the field work of the Board is becoming more complicated. the greatest problem confronting those engaged in this work is that of producing the required number of eggs for hatching purposes at the various hatcheries. This branch of the service has been under the supervision of the Deputy Commissioner of Fisheries, with a well trained corps of men. Through his efforts it has been possible during the last biennium to build up fields which are yielding the majority of eggs necessary for certain species. No efforts have been spent towards supplying trout eggs for the reason that they can be reasonably purchased from Commercial Hatcheries located within the confines of the Commonwealth.

This branch of the service also handles the research work in connection with the survey of hatchery sites, which has been developed into a scientific study including the physical characteristics and chemical an-

alysis of the waters to ascertain if they contain that which is necessary for the proper hatching and raising of fish.

Personal investigations are also made of properties belonging to individuals who desire information as to the possibility of creating fish ponds on their property, either for private or commercial purposes.

The following is the report of the Deputy Commissioner of Fisheries, Mr. C. R. Buller:

Pleasant Mount, Pa.
January 5, 1929

Honorable N. R. Buller,
Commissioner of Fisheries,
Harrisburg, Pennsylvania.

Dear Sir:

The following is an outline of my activities as Deputy Commissioner of Fisheries for the biennium ending May 31, 1928, and for convenience, I have listed them under three groups; Fish Culture, Research and Education.

FISH CULTURE

State Hatcheries: During the above mentioned period I have been in close touch with all fish cultural problems confronting the Superintendents of the various hatcheries, and probably the outstanding fish cultural accomplishment for the period, consists of; the production in 1927 of 532,900 bass for distribution, of a size ranging from two to four inches. This work was carried on at the Pleasant Mount Hatchery in the portion of the Unit comprising the east and west banks of the Lackawaxen Creek and the entire area of Unit Number Two, and in 1928 of the production of 5,132 quarts of yellow perch eggs from the selectively bred stock maintained at Unit Number One of the Pleasant Mount Hatchery.

Private Owned Hatcheries. In Pennsylvania all commercial fish hatcheries are operated under a license granted by the Board of Fish Commissioners, who reserves the right to reject any application for a license if upon investigation, it is found that the property is not suitable or would conflict in any way with the laws governing fishing or pond construction.

In the last two years numerous parties have made application for a commercial hatchery license. In every instance these properties were first inspected by a representative of the Board, and in instances where the applicant so desired, I personally visited the site for the purpose of giving them all information available on the particular branch of fish culture that they were interested in. A full report of my findings and recommendations of each investigation is on file.

Privately Owned Ponds: In recent years a very keen interest has been shown in the construction and maintenance of privately owned fish ponds. Upon request the Board has assisted those interested by furnishing information on pond construction, stocking, the development of natural forage, etc. Where their problems were out of the ordinary and their inquiries could not be intelligently answered by mail, I personally visited the sites and assisted them in working out their problems, to the best of my ability.

Public Waters: Biological studies have been made in many of our public lakes, ponds and streams throughout the State, for the purpose of endeavoring to increase their fish holding capacity.

Working upon the theory that a body of water will only support fish life in proportion to its ability to produce food, the majority of the work has been confined to the forage problem.

Field Work: For a number of years the field service has been under my supervision. This branch of the service consists of: the pond and stream survey, the taking or collecting of fish eggs, and the transferring of certain kinds of baby fish from the brood areas to the nursery areas. At the present time, as applying to our inland waters, the Board does not practice the policy of collecting its fish egg crop from wild fish or the transferring of fish from one lake or stream to another. The egg crop with one exception, the pike perch, is obtained from fish held at the hatcheries for this purpose. At the present time, the Board has no facilities for the holding of the necessary number of brood pike perch required to produce the egg supply, so that this crop is obtained through the cooperative work carried on with the Federal Bureau of Fisheries.

The term fish hatchery as applied to Pennsylvania institutions, is much more than the name applies, as the fish are not only hatched but with a few exceptions, are held in ponds and grown until they reach a considerable size before released in the public waters. The artificial culture of no two species, with the exception of trout, is identically the same and for the best results it requires men especially trained in the various branches of the fish cultural work. As an example, certain men are trained in caring for the eggs on the hatchery battery or the care of the eggs incubated by the trough method, while others are especially trained to feed fish, etc.

The field force consists of a corps of men trained for the artificial taking of the eggs or the collecting of the same as the case may be, and the removing of the baby fish from the brood areas to the nursery areas. This type of work only applies to such species as the bass, catfish and others whose eggs can not be artificially extruded; and the collecting and transferring of live food from the forage areas to the bass areas, which alone consumes a period of approximately three months

each year. While this corps of men is not consigned to any one hatchery, the majority of this type of work is carried on in connection with the Pleasant Mount Hatchery.

In January 1928, the Board created a separate division for its research work, to be known as the Bureau of Research and under the supervision of the Deputy Commissioner of Fisheries, with laboratories and headquarters at the Pleasant Mount Hatchery. Heretofore, the research work was turned over to the Deputy Commissioner of Fisheries, but came under no particular head.

Adult Bass Forage Problem: From the beginning of the artificial raising of black bass at the State Hatcheries, the culturists have realized that the most important check upon production, was the lack of the proper kind of food that the bass of all sizes could be induced to feed and thrive upon, and consequently, for a number of years intense study has been devoted in endeavoring to solve the problem.

Parent bass have been induced to feed upon a number of kinds of so-called artificial foods, but in every instance where this type of food was resorted to, many of the brood fish died and those that did survive, the greater majority of them were barren the following season. Thus far, the only successful food for the parent fish that we have been able to utilize, is the live natural food. The feeding of natural food greatly lessens the mortality and little trouble has been encountered with sterile fish. The serious problem with this type of food is to obtain the vast amount required. While much progress has been made along these lines during the last biennium, we still encounter many unsolved problems.

Baby Bass Forage: When the baby bass were liberated in the public waters during the fry or early feeding stages, little thought was given in reference to their food requirements, but when the Board inaugurated a program for the raising of bass at its hatcheries until they had attained a length of two inches or over, the men in charge were confronted by a number of serious problems, and as with the parent bass, probably the most important one being the question of food.

Just as soon as the yolk sac is absorbed, the baby bass must be provided with nourishment in sufficient quantities and of the proper kind. After considerable consideration, it was decided that artificial feeding, even if artificial food could be found that would be suitable, would not be practical for the baby bass in their early feeding stages.

The task of feeding artificial food to fish is a matter of education. Unless the bass fry receive the food they require in a very short time after the yolk sac is absorbed, the result will be disastrous. In ponds the bass fry are widely scattered and found in depths ranging from six

inches to six feet and in the short time available, a very small percent could be taught to feed. Those that could not be taught to consume the artificial food in this short time, would be a loss.

In the Board's early work of the pond culture of bass, the only solution to the problem appeared to be to create a condition in the pond whereby, it would naturally produce the food required. This partly solved the problem, but the ponds could not be made to sustain fish life and also produce a natural crop of food in a sufficient quantity to feed a worth while number of bass for any length of time.

However, this work led up to the development of the artificial propagation of the water flea for the baby bass, in areas set aside for this purpose. For the past six years much effort has been set forth in order to bring this about and I am glad to report that I believe its culture is a practical success and at the present time under my supervision, the Superintendent of the Pleasant Mount Hatchery is constructing a series of thirty culture beds where the work will be tested out this season.

Fish Diseases: At the fish hatcheries where thousands of fish are confined in small areas under artificial conditions, those in charge must constantly guard against disease. Within the last two years no serious epidemics have occurred at any of the hatcheries. While certain ponds and areas were infected at various intervals with disease, the infected areas were kept well under control and outbreaks did not reach the epidemic stage.

In my judgment, the lack of disease and its control during outbreaks has been entirely due to the sanitary conditions of the plants and to the method of disinfecting the exposed areas.

The comparatively disease free condition of our hatcheries has not caused the Bureau of Research to let up on its work on fish diseases. While at the present time no control measures are known for the majority of fish ailments, nevertheless, practical remedial measures have been worked out for several diseases which heretofore caused considerable mortality among certain species of fish. It is through these treatments that the Board has been able to greatly increase its yearly distribution of pickerel and has enabled the Union City Hatchery to greatly lessen the mortality among its brood fish which heretofore occurred after the fall and spring handling.

The Planting of Bass: The sole aim of the Board of Fish Commissioners is to promote good fishing for all types of fishermen. The artificial rearing of fish does not complete the task and for the best results they must be intelligently planted. The past two years has carried us well forward in streams and lake investigation, with reference to the planting of hatchery reared fish. As a result of this work, it has been found that in Pennsylvania, in every instance where bass have been

introduced into small water areas, it has eventually been to the sacrifice of all other species and in many instances the poor fishing in certain small water areas can be attributed to the bass, and I believe and recommend that the Board should limit the planting of bass to our larger streams and rivers that already contain this species.

Education

When the anglers, both present and future, learn something of the life history of the fish for which they are angling; how they are artificially propagated and distributed from the hatcheries; of what value, economic and otherwise, is the common life found in and about the lakes and streams; then and then only can they be called real conservationists and fishermen.

This work of education is carried on by the Board in a number of different ways; by portraying in motion pictures the life history and artificial propagation of various species, by distributing pamphlets and bulletins on aquatic life, by talks and lectures by men qualified in the work, by sending specimens of fish and fish eggs to our institutions of learning for research work, and by maintaining an aquarium in our major hatcheries where many forms of aquatic life can be seen and studied at close range.

In Pennsylvania, there is a large group of fishermen that the Board can not get in touch with by the distribution of literature, motion pictures or lectures. With the modern facilities for traveling, one or more of the State hatcheries are within several hours ride from almost any portion of the State.

By having well kept and attractive surroundings at the hatcheries and in some instances by the maintenance of aquariums, many of this class as well as others, have been induced to visit the hatcheries where they learn by actually seeing and become interested in this type of conservation which could not be imparted to them in any other manner and in my judgment, for this reason if no other, aquariums as well as attractive surroundings should be maintained at as many of the hatcheries as possible.

Very truly yours,

C. R. BULLER,

Deputy Commissioner of Fisheries.

PROTECTION

The Board of Fish Commissioners is fortunate in having in its employ as wardens, a group of men who not only enforce the laws governing fishing but make it a part of their work to carry on a campaign of

education which, in the opinion of the Board, is a real need in this branch of the service.

All men appointed to the Warden Service must be physically fit, of good character and habits, and at all times be prepared to go to any section of the Commonwealth. Contrary to the general belief, wardens in the employ of the Board are not assigned to any particular location. During the season they usually cover all sections of the Commonwealth.

Officers are urged to use tact in enforcing the law, and not to make arrests on technical offenses unless the particular case warrants. The persons to be punished are the wilful violators of the law. Our officers have often been commended for their judgment in cases where questions have been raised as to whether or not the case was really a violation of the law or only a technical one.

Fish Wardens in Pennsylvania are expected to do their patrolling on foot as it is not possible to successfully patrol streams by automobile. We appreciate the value of a machine in these days, and where conditions warrant they have been allowed.

The Board believes that the day is not far distant when the real enforcement agent will be the one who flies, and who can communicate his findings to someone on the ground.

During the latter part of the last biennium the Commissioner of Fisheries had occasion to talk to a friend who was making daily flights along the Susquehanna River, in the course of the conversation he asked if fish baskets were still permitted, he was advised they were not, and then related what he had seen between Sunbury and Columbia, naturally baskets and walls were plainly visible, and this information led to many arrests during the next week or ten days.

One competent officer could cover considerable territory seldom patrolled, and when he became accustomed to the work, could very readily tell if nets, outlines, or any other illegal devices were being operated.

During the last biennium it has been necessary to more closely patrol Lake Erie, particularly the line between the States of New York, Ohio and the Dominion of Canada. The employes at the Erie Hatchery handle this work, and several nets were confiscated and fines collected.

The State Police and Game Protectors rendered the same excellent cooperation to the Board. The Board realizes the many duties these men have to perform, nevertheless, it was possible to render valuable service and many arrests were made by them. The Board deeply appreciates this cooperation.

Enforcement lies in the combined efforts of all those interested in the fisheries. The last biennium has shown much activity of Associations and individuals. As long as they cooperate with the Board in this way, complete enforcement will be eventually assured. That may be

a rather broad statement but we sincerely believe that the cooperation received from the fishermen, Associations, Clubs and individuals will eventually break down law violations.

Specific data relative to the number of arrests, convictions, amount of fines collected, etc., will be found on Page 90.

SPECIAL FISH WARDENS

The Special Fish Warden is doing a good work in connection with the apprehension of violators of the law by reporting violations to either the Harrisburg office or the regular officer in his district. There was a time when Special Fish Wardens were of little value, but with the enactment of the license law, Associations took it upon themselves to have members who were specially qualified approved as Special Wardens.

For the information of those interested, the section of the law covering applications is quoted:

"Section 258. Special Fish Wardens. The Board of Fish Commissioners, on written application of a properly organized fish protective association or on the written application of any association or individual owning or leasing waters, may appoint one or more Special Fish Wardens for the county in which the application is made. The Board of Fish Commissioners may appoint Special Fish Wardens to act anywhere within the Commonwealth. All Special Fish Wardens appointed under authority of this section may exercise the powers of their appointments until the thirty-first day of May next succeeding the date of their appointment and no longer. Special Fish Wardens shall have the same powers and shall make the same reports as is conferred on and required from regular fish wardens."

The Board of Fish Commissioners does not ask the Special Officer to actively engage in enforcing the laws, and it does not expect him to do so, the fact that it is known in his community that he is a Special Warden is sufficient to have a deterrent effect on at least some of the violators, and any violation which he deserves when he is on the stream can very easily be conveyed to our regular officer if he does not care to bring prosecution himself.

There are about 419 Special Fish Wardens in Pennsylvania, naturally with such a large force it is impossible to make a personal contact with all of them. Whenever it is observed that anyone holding a special warden's commission is not doing as an officer should, the Board of Fish Commissioners at Harrisburg will greatly appreciate such information, and their commission will be revoked.

The regulation of the Board covering the appointment of Special Wardens is that they shall be recommended by an Association, Club or

individual. In the case of recommendation by Clubs or Associations the recommendation must come through as an order of business at one of their stated sessions, and the proper application must be filled out and returned with the recommendation.

If an individual recommends the appointment, the Board has one of its regular officers personally get in touch with the applicant. In this way the Board endeavors to make only those appointments which will not only be a credit to the Board in its work but to those who are responsible for their appointment.

RESIDENT CITIZEN'S FISHING LICENSES

If it were not for the license law the Board of Fish Commissioners would still be subject to appropriations, which were barely sufficient to operate its hatcheries. The first year the license law became effective the receipts were \$50,000 in excess of the appropriation for any one year. The revenue from this source has gradually grown until to-day the yearly receipts total \$293,397.

The receipts by years are as follows:

1922	\$203,061
1923	214,392
1924	247,281
1925	250,873
1926	261,109
1927	293,397

It is our firm belief that if any State is to be successful in the propagation of fish it must be through the enactment of a resident license law.

If history is to be depended upon the following will result:

1. The actual accomplishment of things advocated for many years.
2. The creation of a spirit of cooperation between the fishermen, Associations and Clubs which was little dreamed of under appropriations.
3. Proper maintenance and extension of present hatcheries.
4. Purchase of sites and construction of new hatcheries.

Since the enactment of the Resident Citizen's License Law many States in the Union have been in close touch with Pennsylvania seeking information as to the proper laws which should be enacted. In some instances States have had license laws enacted which were practically useless insofar as a revenue producer, by having embodied in the law exemption as to kinds of tackle used, exempted for certain waters, and other restrictions which made it impossible to enforce. The only law which can be properly administered is one which covers

every fisherman who is on the waters within the age limit, regardless of whether he is fishing with a home-made pole and line, or with an outfit costing \$100.00. You cannot discriminate and have an effective law.

The Board is certain the above statements are facts and not based on theories. It goes without saying that any restriction on the license law in Pennsylvania would immediately make it inoperative and useless.

Mention has frequently been made to the license button being used by Pennsylvania. The Board believes it has passed the experimental stage in license buttons for the fishermen. It is a well known fact that it takes from eight to ten years to build up a license to its peak figure. The coming year, 1929, will be our eighth year and each succeeding year has shown a marked increase in the number of licenses issued.

In perfecting the button which is now used by the fishermen, the Board has spent much time and thought and it believes it is perfection insofar as its requirements are concerned.

Practically no complaints have been made since the adoption of the button with a device for carrying the license, which proves there is no danger of losing the license from the button. We have recently learned that other States have adopted the Pennsylvania System.

At the last session of the Legislature the fishermen amended the law increasing the license fee from \$1.00 to \$1.50. It became effective on January 1, 1928 and from all indications the receipts for 1929 will be in excess of those for 1928 by at least \$150,000. This increase assures rapid progress with the construction of new hatcheries. The fishermen are to me commended for their splendid assistance in furthering the work of the Board.

Statement showing Resident Citizen's Fishing Licenses as issued by the County Treasurers will be found on Page 89.

For the information of the public the accompanying cut shows clearly the button and license now in use in Pennsylvania.

NON-RESIDENT FISHERMEN'S LICENSE LAW

Each year sees considerable increase in the number of non-resident fishermen. Pennsylvania apparently stands very high in the opinion of non-resident fishermen, as their number increased over forty per cent during the last biennium. Pennsylvania boasts of many excellent fishing grounds and whenever a non-resident has so requested we have furnished him specific locations for the species of fish he desired to angle for. The most popular counties are Monroe, Pike, Wayne, Susquehanna, Bradford, Potter and Tioga.

COMBINATION IDENTIFICATION BADGE AND LICENSE HOLDER

1928

Date _____ 1928

Licensee _____

Residence _____
(Number and Street)

P. O. Address _____
(Town or City)

Occ. _____

Licensee's Signature _____

Commissioner of Fisheries

Executive Secretary (OVER)

LICENSE IS FOLDED AND
SLIPPED IN BACK OF BADGE

1928
134574
PENNSYLVANIA
RESIDENT
CITIZEN'S
FISHING
LICENSE

PENNSYLVANIA
RESIDENT CITIZEN'S
FISHING LICENSE
134574

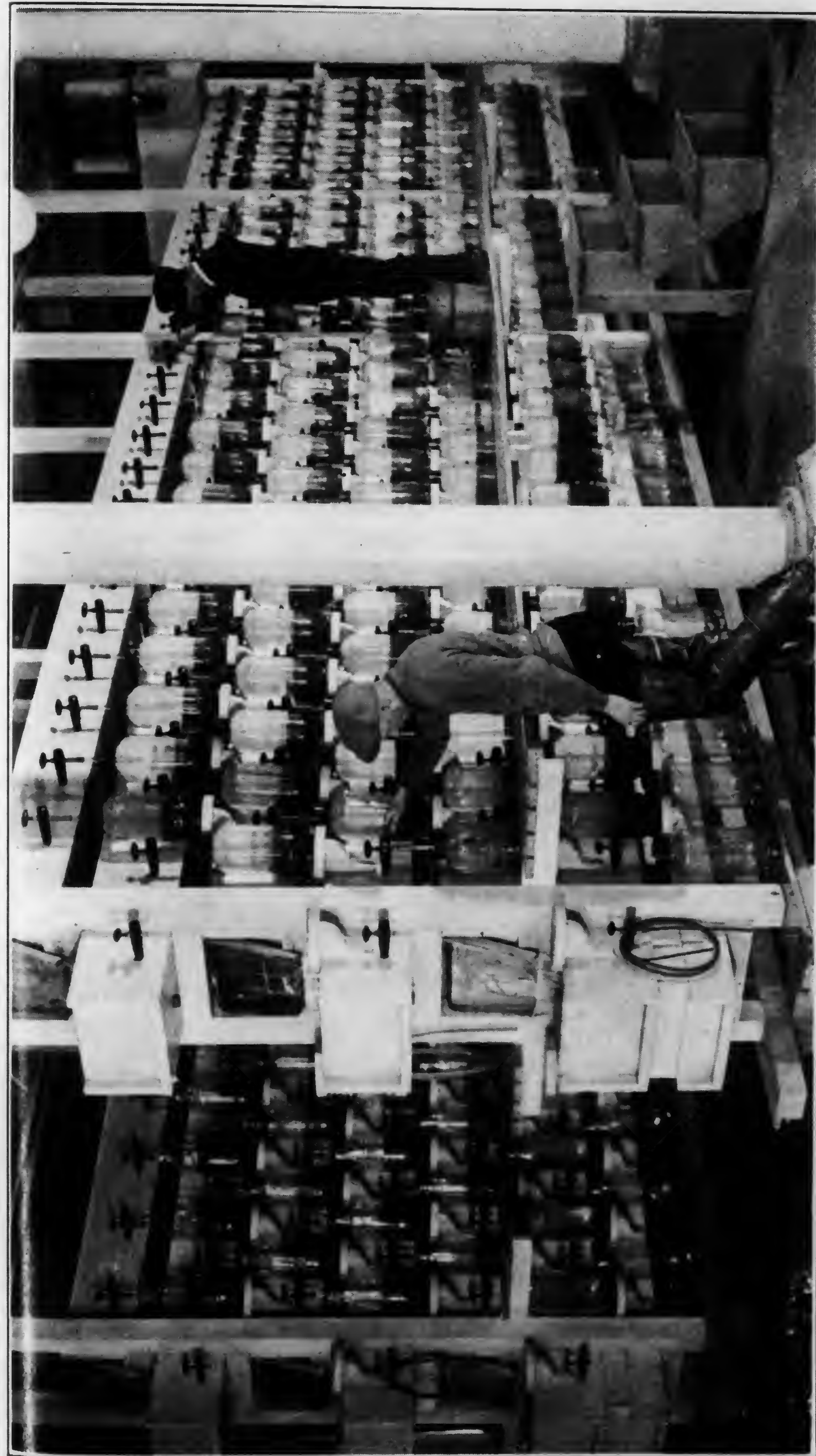
This badge is to be used as an identification badge following the date of issue. License upon request or other official transfer this badge to the proper authorities.

The Pennsylvania license is reciprocal. The Board believes a flat fee of \$5.00 for all non-resident fishermen should be adopted. Certainly non-residents should pay a fee considerably increased to that of the resident. When you consider the work which is done by Pennsylvania to increase fishing in its waters it is no more than reasonable to expect non-residents to contribute their share.

The following table has been prepared so that the fishermen will be familiar with the fees charged by other States under the Reciprocal Law:

<i>State</i>	<i>Cost of License</i>
Alabama	\$5.00
Alaska	2.50
Arizona	2.50
Arkansas	5.00
California	3.00
Colorado	3.00
Connecticut	3.25
Delaware	5.00
District of Columbia	2.50
Florida ..	5.50
Georgia ..	2.50
Idaho	5.00
Illinois	2.50
Indiana	2.50
Iowa	3.00
Kansas	3.00
Kentucky	2.50
Louisiana ..	5.00
Maine	3.15
Maryland	5.50*
Massachusetts	5.25
Michigan	5.00
Minnesota	3.00
Mississippi	2.50
Missouri	3.00
Montana	3.50
Nebraska	2.50
Nevada	3.00
New Hampshire	3.15
New Jersey	5.50
New York	5.50
New Mexico	3.00

*If applicant is resident of county other than Garrett, Allegheny, Carroll, Washington, Frederick or Dorchester the fee will be \$2.50.



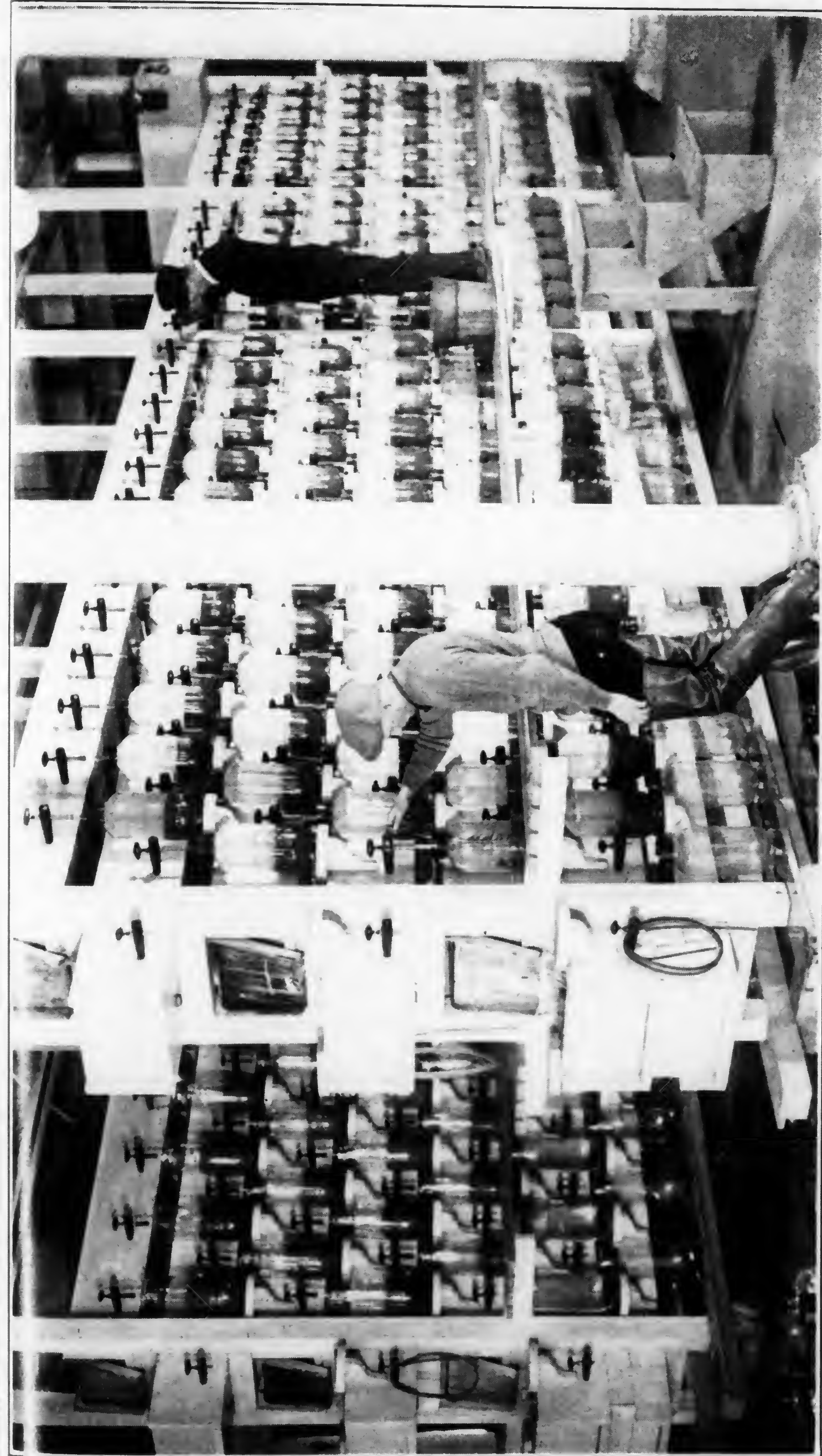
HATCHING BATTERY ON GROUND FLOOR, ERIE HATCHERY

The Pennsylvania license is reciprocal. The Board believes a flat fee of \$5.00 for all non-resident fishermen should be adopted. Certainly non-residents should pay a fee considerably increased to that of the resident. When you consider the work which is done by Pennsylvania to increase fishing in its waters it is no more than reasonable to expect non-residents to contribute their share.

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Alabama	\$5.00
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Arkansas	5.00
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Colorado	3.00
Connecticut	3.25
Delaware	5.00
District of Columbia	2.50
Florida ..	5.50
Georgia ..	2.50
Idaho	5.00
Illinois	2.50
Indiana	2.50
Iowa	3.00
Kansas	3.00
Kentucky	2.50
Louisiana ..	5.00
Maine	3.15
Maryland	5.50*
Massachusetts	5.25
Michigan	5.00
Minnesota	3.00
Mississippi	2.50
Missouri	3.00
Montana	3.50
Nebraska	2.50
Nevada	3.00
New Hampshire	3.15
New Jersey	5.50
New York	5.50
New Mexico	3.00

*If applicant is resident of county other than Garrett, Allegheny, Carroll, Washington, Frederick or Dorchester the fee will be \$2.50.



HATCHING BATTERY ON GROUND FLOOR, ERIE HATCHERY

<i>State</i>	<i>Cost of License</i>
North Carolina	3.00
North Dakota	3.00
Ohio	\$2.50
Oklahoma	5.00
Oregon	3.00
Rhode Island	2.50
South Carolina	3.25
South Dakota	2.50
Tennessee	2.50
Texas	5.00
Utah	3.00
Vermont	3.15
Virginia	2.50
Washington	5.00
West Virginia	5.00
Wisconsin	3.00
Wyoming	3.00

OPERATION OF THE TUG "COMMODORE PERRY"

The Tug "Commodore Perry" rendered valuable service to the Board during the last biennium. Without it, it would have been practically impossible to handle the lake situation and take care of the other needs of the Board. The crew devotes a considerable portion of their time to the interests of the inland fishermen. During the hatching and shipping seasons they are employed at the hatchery or on the road with consignments of fish for individuals.

During the next biennium the tug is to render valuable service to the Research Department. A biological survey is to be made of the bay and lake. Many problems concerning the inland waters will also be handled through this Department. This is of real value to all fishermen throughout the Commonwealth.

FISHING INDUSTRY ON LAKE ERIE

The Board of Fish Commissioners is continually working with the commercial fishermen towards the improvement of the fishing conditions on Lake Erie. Unfortunately the catches have been considerably smaller than formerly.

During a normal year from 80 to 90 tugs operate out of this port. During the last year of this biennium there were only 34 tugs operating, fishing approximately 272,000 feet of bull nets and 50,000 of gill nets. During the fall when the season is at its height there are about 2,000,000 feet of twine in the lake, which would be approximately 378 miles of nets. In a normal year 500 miles of twine per day is lifted by the fleet.

A study of the catch of fish from the Great Lakes for 1927 shows that Lake Erie produced 23,790,000 pounds, which is only equalled by Lake Michigan, which produced 23,681,000.

This is quite a contrast with Lake Erie in 1923 when 44,378,000 pounds were taken.

The average for ten years shows that Lake Erie produced 38,963,000 pounds which is 15,000,000 greater than the average for any other Lake.

The year 1927 was the poorest for ten years. In the opinion of the Board of Fish Commissioners there are many contributory causes for this, three of the most important being—The Abstraction of Water by the City of Chicago, Pollution, Amount of Gear and Type of Gear Used.

The United States Bureau of Fisheries has had several biologists at work on the Lake during the last biennium and has called frequent conferences on the question. Early in 1928 representatives of the different States met at Lansing, Michigan, at the request of Governor Green. Those represented were the United States Bureau of Fisheries, New York Conservation Commission, Ohio Bureau of Game and Fish, Pennsylvania Board of Fish Commissioners and the Province of Ontario. They have formulated a comprehensive, cooperative program. Pennsylvania's work is to be in charge of Robert T. Hance, Department of Zoology, University of Pittsburgh, Pittsburgh, Pennsylvania, who has proposed the following program for Pennsylvania:

PLAN OF COOPERATION SUBMITTED BY THE UNIVERSITY OF PITTSBURGH

The University of Pittsburgh through the Department of Zoology proposes the following plan of scientific cooperation on the problems of the Lake Erie Fisheries with the Bureau of Fisheries of the State of Pennsylvania.

The University will establish two research assistantships, the holders of which will devote their entire time to the study of fishery problems to be mutually agreed upon. One of these assistants will deal chiefly with the animal side of the question while the other will study the plant conditions. These men will carry on their studies chiefly on the campus under the staffs of the Department of Botany and Zoology and will have funds available for traveling to and from Lake Erie as their work necessitates.

Although the problems that seem most pressing after conference with the representatives will be considered first the following list of topics needing further study has been compiled by Mr. George J. Dambach and may prove suggestive.

PROBLEMS FOR INVESTIGATION

(1) *Food*

- (a) Study of stomach content of the commercial fish. The stomach content of fish needs careful study to understand the necessary foods consumed by the lake fish.
- (b) Economic aspect of feeding young fish. Great expense is involved in collecting the natural foods for the development of young fish; a method might be worked out for the feeding of artificial foods to young fish.
- (c) The effects of insects as a food on fish. It is believed that insects, especially may-flies, cause mortality among the commercial fish; such sources of food need investigating.

(2) *Embryology*

- (a) The need for further knowledge of embryology of the commercial fish.

(3) *Fertility of fish eggs*

- (a) Increasing greater percentage of yield of the fertility of eggs.

A new method for hatchery needs to be worked out. The present percentage of yield ranges from 50% to 75% for the majority of commercial fish. It would probably be possible to increase this yield greatly through research work.

- (b) A study of the causes of irregularly shaped fish eggs.

At the present time there seems to be about 25% to 50% of irregularly shaped fish eggs which do not become fertilized.

- (c) The study of heavy metals which might cause low percentage of fertility.

It is well known that minute traces of copper and mercury cause sperm of fish to lose their fertilizing power. It would be well to make chemical tests of the water used in the hatcheries.

(4) *Studies of the Sturgeon.*

No satisfactory hatching method has been worked out for the Sturgeon and a great decline in the catch has been experienced for a number of years.

(5) *The Temperature effect on fish-eggs.*

It is well known that eggs in general hatch best at a suitable temperature; such temperature for commercial fish and a proper method for controlling it must be determined.

(6) *Genetical studies of commercial fish.*

Experimental studies of cross breeding. Under such a study better strain of fish might be produced to resist diseases and other causes of mortality, and possibly to increase production.

(7) *Cytological and histological aspect of commercial fish.*

A study of the microscopic anatomy of the reproductive and other organs of the fish must be made to lay a foundation for other work.

(8) *Parasitology*

The physiological effects of parasites needs careful study.

It is to be hoped that the results of the Biological Survey during the next biennium will be of great assistance to the fish culturists, and that those in charge will be able to furnish some solution to this question which is most important to the preservation of this great industry.

On Pages (92 to 97) will be found statistical data covering the catches on Lake Erie.

SHAD SEINE LICENSES

The once great shad industry is practically a thing of the past insofar as Pennsylvania is concerned. The completion of the Conowingo Dam at Conowingo, Maryland, precludes the possibility of any shad entering Pennsylvania waters, consequently no licenses were issued during 1928. The Board will recommend to the next session of the Legislature an amendment to the fish code, eliminating Shad Seine Licenses insofar as the Susquehanna River is concerned.

Possibly ten or twelve licenses were issued for the portion of the streams within the limits of the tide emptying into the Delaware River; however, no shad were reported caught during 1927. We are told that only an occasional shad is taken in the lower reaches of the Delaware. No doubt one of the principal reasons is, that this portion of the river is highly polluted.

PERMITS

During the last biennium 516 permits were issued for the Drawing of Dams, Use of Explosives, Transfer of Fish, Taking of Fish for Scientific and Propagation purposes, etc. Two hundred and fifteen of these were issued for the drawing of dams to make necessary repairs or for cleaning.

If persons owning or controlling dams would get in touch with the Board when it is necessary to draw the water for any reason, no doubt much embarrassment could be avoided. There were 24 permits

issued for the use of explosives, mostly in the case of drownings. To the Board's knowledge bodies of drowned persons are rarely brought to the surface through the use of dynamite; however, it is almost mandatory upon the Board to issue these permits for the reason of the personal feelings of those who were nearest to the person drowned. The Board has always extended this courtesy and has had an officer present so that as few fish as possible were killed. In emergencies all persons should call by phone, or wire the office at Harrisburg when proper permission will be granted. The only delay will be in the arrival of an officer of the Board. This usually takes but a short time.

The Board of Fish Commissioners must administer the laws as it finds them upon the statutes and while there are times when the individual feels permits in certain cases are not necessary, it is the opinion of the Board that the law is a good one and should be enforced to the letter. If it were not for this law, unscrupulous persons could draw dams at will, remove the fish, and dispose of them as they saw fit, the law not only conserves the fish, but it protects the fisherman and preserves for him many waters which otherwise would not be available.

COMMERCIAL FISH HATCHERIES

During the last biennium there was a considerable increase in licenses issued for Commercial Hatcheries for the raising of bait fish. This was caused by the amendment of the law prohibiting the taking of more than fifty bait fish by any one person.

The result of this law is commencing to have its effect upon all waters. It was a well-known fact that if fishing was to be maintained for certain species, it was imperative that a law be enacted prohibiting the taking of more than fifty bait fish in any one day.

All fair-minded fishermen agree with the Board on this section of the law. The establishing of hatcheries for the raising of bait is solving the problem in most sections. Each year will see an increase in the number of bait fish propagated. It is a good business for those who are properly situated, but before expending any money along these lines we would suggest that you first take the matter up with this Board for further information.

While the commercial hatcheries for the raising of trout had rather an excellent business during the last two years as the statements contained in another part of this report will show, it is a problem as to just how they will fare in the future, one of three things must be done, either the hatcheries have to be abandoned, the output greatly curtailed, or increase the price of the fish propagated. Whether or not the market would be able to absorb the increase remains to be

seen. It is a certainty that something will have to be done. The reason for this is the greatly increased cost of food for trout, mention of which was made in the article on propagation. Surely no commercial hatchery can pay three times as much for their food and exist for any length of time unless the consumer is willing to absorb his share of this increase.

We hope that something can be worked out whereby all commercial hatcheries can remain in business. The Board will render every assistance possible as it means much to the fishermen of Pennsylvania.

The following is a list of the Commercial Hatcheries in Pennsylvania:

Trout Hatcheries

General Harry C. Trexler, Young Building, Allentown, Pa.

Brook Trout Company of Penn Forest, Mauch Chunk, Pa.

Coudersport Cold Spring Fish Hatchery, c/o O. J. Freeman, Coudersport, Pa.

L. F. Grammes & Sons, Brook Trout Hatchery, 1119 Linden Street, Allentown, Pa.

Crystal Spring Brook Trout Company, William Moss, Manager, Port Allegany, Pa.

Paradise Brook Trout Company, R. F. D.—Cresco, Pa.

Commercial Bait Fish Dealers

L. S. Yoder (Flag Run)Salisbury, Pa.
 A. D. Hudson,Linesville, Box 143
 Harold Von Waldburg, Long Pond Commercial Hatchy. Lakeville, Pa.
 F. L. HaightNanticoke, Pa.
 J. D. KizerMaplewood, Pa.
 Marsh Lake HatcheryLake Ariel, Pa., R. D. No. 1
 E. S. LaBarHawley, Pa.
 Oscar Olsommer Lake Wynoosky Hatchery ...Canadensis, Pa., R. D.
 Ralph Van GorderNarrowsburg, N. Y.
 Charles HetzelWaymart, Pa.
 Marshall SmithHonesdale, Pa., R. D. No. 4
 Grant WilsonGreentown, Pa.
 Oliver Locklin, Locklin LakeLakeville, Pa.
 Henry MaskersGreentown, Pa., R. D. No. 1
 Angie W. PeoplesNew Providence, Pa.
 Ziba LottMeshoppen, Pa.
 Christian Liebrich, Little Meadow Lake 616 Pittston St., Scranton, Pa.
 George GredleinHonesdale, Pa., R. D. No. 2
 Charles A. Weiser ..Pottstown, Pa.

F. L. Benjamin	Cortez, Pa.
Levi Edwards	Elmhurst, Pa., R. D. No. 1
F. G. Polley	Lake Ariel, Pa.
Paul J. Knorr	Honesdale, Pa.

CLOSED WATERS

This subject has been taken care of under "Creating New Fishing Waters" with the exception of requests for the closing of waters presumably for increasing fishing.

The Board has gone on record as being opposed to the closing of any waters to fishing except those within the wire enclosure of a Game Reserve, the waters within the confines of a cooperative nursery, or within the limits of a public park, borough or city for exhibition purposes.

As set forth in the last biennial report, nothing is to be gained by closing waters with the hope of increasing the fishing, the proper method to pursue is to file applications each year for the waters you are interested in. The size of the fish now being distributed will do much more to increase the fishing than closing waters for a period of time.

The Board would suggest that when the question is brought up at meetings of Associations or others, that they get in touch with the Board at Harrisburg and go over the entire proposition in their particular case.

ACKNOWLEDGMENTS

Grateful acknowledgment is made to all Associations, Clubs, individuals and fishermen generally throughout the Commonwealth who assisted the Board so ably during the last biennium. Without their cooperation our work indeed would have been a failure.

Much credit should be given to those connected with the various Railroads for the free transportation of fish and eggs, and the return of empty cans to the hatcheries. Without their splendid assistance it would have been impossible to distribute the fish from our hatcheries.

The public Press has been most generous in publishing items of interest to the fishermen, and placing before the public the many activities of the Board. Through this source we have kept in close touch with the fishermen.

Tribute should also be paid to the entire personnel of the Board for their combined efforts in making the administration of its many activities one of the most noteworthy since the enactment of the fishermen's license law.

FINANCIAL STATEMENT

Covering Fiscal Period June 1, 1926 to May 31, 1928.

In explanation of the balance at the end of the biennium, this amount represents the greater part of the total receipts for any calendar year. To budget and expend the total estimated receipts in any biennium would leave the Board without sufficient funds to carry on its activities during the balance of the year at the end of the biennium.

FINANCIAL STATEMENT

June 1, 1926 to May 31, 1928

Balance—FISH FUND—June 1, 1926 \$208,725.03

Receipts

Resident Fishing Licenses	623,094.22
Non-resident Fishing Licenses	36,645.85
Fines	31,725.40
Commercial Hatchery Licenses	630.50
Shad Seine Licenses	194.00
Lake Erie Licenses	12,417.00
Interest	15,243.63
Other Sources	1,403.82

Total \$721,354.42

Total Funds available this Biennium	930,079.45
Less—Expenditures this Biennium	600,788.47
Balance—FISH FUND—June 1, 1928	329,290.98

Balances

State Treasury	329,223.17
Mechanics Trust Company, Harrisburg, Penna.	67.81

Total \$329,290.98

DETAILED STATEMENT OF DISBURSEMENTS

Administrative Salaries	\$ 43,210.60
Administrative Expenses—Fishermen's License Tags, office supplies and equipment; furniture and fixtures, etc.	52,556.75

Traveling Expenses—Board Members, Commissioner of Fisheries, etc.	8,407.14
Legal Expenses	975.38
Printing—Resident Fishing Licenses; all printing supplies for administrative offices, hatcheries and field ...	9,141.05
Salaries and Expenses of Fish Wardens	92,174.61
Hatchery Operations—Payment of salaries and expenses of all employes at the six hatcheries, expenses hatching, rearing and distribution of fish, etc.	267,158.16
Operating Tug "Commodore Perry" on Lake Erie—salaries of crew, operating expenses in patrol work, collection of fish and eggs, distribution of fish, etc.	15,903.92
Purchase of Land	17,463.21
Field Work—Salaries and expenses of field employes—expenses in collection of fish and fish eggs supplied to hatcheries, etc.	44,609.58
Buildings, ponds, extensions, etc. New construction work at all hatcheries	48,265.24
Research	872.83
Refunds to County Treasurers	50.00
Total	600,788.47

INDEX TO STATISTICS

Resident Citizen's Fishing Licenses issued by Counties for the years 1922-1927, Inclusive.

Statement of Prosecutions for violations of the laws governing fishing.

Report of Commercial Fish Hatcheries, Production and Value of Fish. 1926 and 1927.

Report of catch of fish, Lake Erie, Pennsylvania waters, 1926 and 1927.

Statement showing catch of fish in Lake Erie, Pennsylvania waters for the period 1918 to 1927, inclusive.

Reprints from Bureau of Fisheries, Statistical Bulletin No. 807, Lake Fisheries, 1927 by States.

Statement of Distribution of Fish by counties for 1926.

Statement of Distribution of Fish by counties for 1927.

Financial Statements.

DATA IN RE: NUMBER OF RESIDENT AND NON-RESIDENT FISHING LICENSES ISSUED SINCE THE LAWS BECAME EFFECTIVE

RESIDENT (Effective January 1, 1922)

<i>Year</i>	<i>Number</i>	<i>Cost</i>
1922	203,061	\$1.00 each
1923	214,392	\$1.00 each
1924	247,281	\$1.00 each
1925	250,873	\$1.00 each
1926	261,109	\$1.00 each
1927	293,397	\$1.00 each

NON-RESIDENT (Effective July 8, 1919)

1919	50	\$5.00 each
1920	1,836	\$5.00 each
1921	2,031	\$5.00 each
1922	2,768	\$5.00 each
1923	2,931	\$5.00 each
1924	2,964	\$5.00 each
1925	3,182	\$5.00 each
1926	3,776	Reciprocal
1927	5,200	Reciprocal

RESIDENT CITIZEN'S FISHING LICENSES ISSUED
Calendar Years 1922-1927, Inc.

	1922	1923	1924	1925	1926	1927
Total	203,061	214,392	247,280	250,873	261,109	293,397
Office of Board	12,241	9,554	9,484	8,268	7,599	7,181
Fish Wardens	6,088	8,915	8,171	2,302		
County Treasurers						
Adams	894	1,000	1,164	1,134	1,294	1,148
Allegheny	5,799	7,374	9,000	9,956	10,545	11,698
Armstrong	1,159	1,448	1,959	1,925	1,771	2,761
Beaver	1,060	1,323	1,953	2,192	2,235	2,664
Bedford	1,593	1,622	2,049	1,978	1,951	2,174
Berks	6,774	7,288	7,505	8,448	9,406	10,272
Blair	4,890	5,285	5,963	6,037	6,073	6,799
Bradford	3,122	2,846	3,930	4,025	4,409	4,973
Bucks	1,830	1,697	1,701	1,885	2,011	2,121
Butler	1,750	2,618	3,510	3,950	3,032	3,372
Cambria	4,446	4,450	5,599	5,604	5,962	6,787
Cameron	684	702	709	731	827	924
Carbon	2,191	2,162	2,689	2,911	2,952	3,440
Centre	2,295	2,407	2,760	2,737	3,048	3,308
Chester	1,868	2,086	2,195	2,291	2,365	2,609
Clarion	819	1,085	1,583	1,483	1,587	2,053
Clearfield	3,336	3,164	3,744	3,667	4,193	4,831
Clinton	2,661	2,603	3,061	3,034	3,308	3,532
Columbia	2,591	2,603	3,079	3,440	3,508	3,753
Crawford	3,161	3,180	4,012	4,078	5,198	5,180
Cumberland	1,839	1,917	1,953	1,901	2,145	2,221
Dauphin	4,381	4,659	5,350	5,992	6,183	6,919
Delaware	634	1,002	924	949	1,107	1,248
Elk	1,508	1,648	1,576	1,712	1,926	2,502
Erie	4,977	6,303	8,034	8,415	9,117	10,365
Fayette	2,539	2,818	3,373	3,406	3,504	4,045
Forest	620	695	677	775	741	749
Franklin	1,474	1,966	2,204	2,031	1,994	2,037
Fulton	217	224	349	417	273	360
Greene	811	920	1,147	1,116	1,146	1,536
Huntingdon	1,709	1,991	2,504	2,250	2,096	2,415
Indiana	980	1,248	1,400	1,418	1,510	2,058
Jefferson	1,459	1,516	1,560	1,642	1,716	2,105
Juniata	637	682	878	829	682	855
Lackawanna	14,089	14,578	16,549	17,896	17,657	19,724
Lancaster	5,271	5,605	6,053	6,177	6,184	6,066
Lawrence	1,802	2,286	3,245	2,944	3,222	3,640
Lebanon	1,643	1,908	2,315	2,363	2,508	2,499
Lehigh	2,910	3,590	5,443	6,534	8,089	9,209
Luzerne	15,604	13,945	16,497	18,296	18,403	23,167
Lycoming	6,221	6,418	6,850	6,881	7,570	8,496
McKean	2,261	2,273	2,277	2,471	2,703	3,312
Mercer	2,599	3,338	4,101	4,172	4,566	5,022
Mifflin	1,577	1,965	2,478	2,311	2,402	3,050
Monroe	2,803	2,818	3,121	2,965	3,394	3,718
Montgomery	3,465	3,466	3,617	3,714	4,774	5,162
Montour	416	485	562	589	604	699
Northampton	3,302	3,379	3,548	3,474	3,676	3,888
Northumberland	3,589	3,830	4,696	4,966	4,774	5,457
Perry	562	556	592	646	585	801
Philadelphia	4,011	4,043	4,858	5,099	5,889	6,232
Pike	535	638	633	704	1,093	1,201
Potter	2,190	1,768	1,594	2,258	2,521	2,891
Schuylkill	4,352	3,469	4,642	5,029	5,333	6,569
Snyder	820	788	853	803	740	800
Somerset	2,391	2,864	2,831	2,895	2,971	3,526
Sullivan	592	600	848	713	749	785
Susquehanna	2,774	2,239	2,229	3,580	3,752	4,151
Tioga	2,209	2,320	2,312	2,476	2,495	2,721
Union	1,436	1,695	1,997	1,788	1,836	1,981
Venango	3,242	3,633	4,373	4,099	4,214	4,624
Warren	2,540	2,683	2,817	2,880	3,029	3,442
Washington	2,108	2,292	3,019	3,265	3,384	3,796
Wayne	2,181	2,344	2,638	2,858	3,120	3,264
Westmoreland	2,649	3,300	4,365	4,106	4,503	5,218
Wyoming	1,163	1,270	1,463	1,543	1,515	1,657
York	4,717	5,005	6,025	5,449	5,440	5,634

STATEMENT OF PROSECUTIONS
FOR VIOLATIONS OF THE LAWS GOVERNING FISHING
YEARS—1926-1927

Charge	Number of Arrests
Illegal Devices	327
Fishing Without Licenses	389
Sunday Fishing	93
Taking Under-size Fish	137
Taking Fish Out of Season	67
Dynamiting	27
Loaning License	21
Aliens	21
Illegal Number of Fish	21
Fishing in Hatchery Grounds	6
Fishing in Closed Streams	6
Taking Frogs by use of Light	22
Pollution	4
Interference With Officer	3
Drawing Dams without Permit	2
Taking Frogs out of Season	3
False Information	2
Total	1,151

Report of Commercial Fish Hatcheries
Production and Value of Fish
1926

Species	Number	Pounds	Eggs	Value
Brook Trout—Market	180,991	58,438		\$48,639.67
Brook Trout—Live Mature	150,220			25,102.02
Brook Trout—Advance Fry	101,900			1,960.50
Brook Trout—Green Eggs			5,550,000	5,540.00
Brook Trout—Eyed Eggs			24,043,000	25,330.23
Rainbow Trout—Market	2,613	800		1,000.00
Rainbow Trout—Live Mat.	3,332			914.10
Rainbow Trout—Adv. Fry	7,500			112.50
Rainbow Trout—Eyed Eggs			695,800	1,043.70
Brown Trout—Live Mature	14,900			1,836.57
Goldfish	1,321			79.95
Sunfish	7,812			391.67
Bait-Fish	160,964			3,307.50
Miscellaneous	3,345	367		377.60
Total	634,898	59,605	30,288,800	\$115,635.01

Report of Commercial Fish Hatcheries
Production and Value of Fish
1927

Species	Number	Pounds	Eggs	Value
Brook Trout—Market	168,112	55,944	-----	\$44,652.37
Brook Trout—Live Mature	206,940	-----	-----	40,841.68
Brook Trout—Advance Fry	324,633	-----	-----	4,256.60
Brook Trout—Fingerlings (3" to 5")	101,172	-----	-----	3,035.16
Brook Trout—Green Eggs	-----	-----	7,554,125	5,794.89
Brook Trout—Eyed Eggs	-----	-----	44,300,254	46,043.40
Brown Trout	15,900	-----	-----	2,073.40
Rainbow Trout—Eyed Eggs	-----	-----	870,250	1,305.37
Rainbow Trout—Market	2,800	933	-----	1,166.08
Rainbow Trout—Live Mature	4,737	-----	-----	714.87
Goldfish	300,949	-----	-----	12,103.80
Sunfish	5,383	-----	-----	269.39
Perch	189	-----	-----	9.45
Catfish	1,475	380	-----	125.00
Pickrel	431	255	-----	53.30
Bait-fish	208,533	-----	-----	4,216.15
Miscellaneous	-----	120	-----	35.60
Total	1,341,254	57,632	52,724,629	\$166,696.51

REPORT OF CATCH OF FISH
LAKE ERIE
Pennsylvania Waters
1926

Species of Fish	Pounds	Estimated Value
Blue Pike	2,935,674	\$211,015.60
Cisco	1,126,321	122,237.26
White Fish	605,391	124,690.74
Yellow Perch	76,394	6,448.65
Carp	50,297	3,162.53
Pike Perch	10,209	1,444.59
Catfish	1,994	360.96
Sturgeon	1,776	710.40
Lake Trout	48	8.64
Miscellaneous	193,351	14,035.58
	5,001,455	\$484,114.95

REPORT OF CATCH OF FISH
LAKE ERIE
Pennsylvania Waters
1927

Species of Fish	Pounds	Estimated Value
Blue Pike	2,189,557	\$214,378.73
Cisco	1,624,737	198,048.23
White Fish	288,135	72,475.51
Yellow Perch	206,329	19,881.37
Gray Bass	33,808	1,345.35
Mullets	20,329	577.41
Pike Perch	19,175	2,675.61
Burbot	7,443	117.91
White Bass	4,343	347.44
Carp	3,465	125.13
Catfish	3,157	376.50
Sturgeon	1,109	443.60
Lake Trout	52	6.50
Miscellaneous	6,555	1,384.28
	4,408,194	\$512,183.57

STATEMENT
SHOWING CATCH OF FISH IN LAKE ERIE
PENNSYLVANIA WATERS
1918-1927, Inc.

Species of Fish	Number of Pounds	Value
Cisco	85,003,626	\$4,469,440.54
Blue Pike	21,442,873	1,314,513.17
Yellow Perch	1,014,647	75,451.96
Pike Perch	1,306,733	87,097.52
White Fish	3,190,590	653,212.00
Lake Trout	4,409	623.45
Catfish	7,857	1,048.95
Carp	196,775	8,853.10
Sturgeon	7,089	2,705.01
Burbot	22,222	849.76
Mullets	28,430	792.73
Miscellaneous	802,869	38,657.99
	113,028,120	\$6,653,246.18

COMPARATIVE STATEMENT
BY YEARS SHOWING CATCH OF FISH IN LAKE ERIE
PENNSYLVANIA WATERS
1918-1927, Inc.

Species of Fish	1918		1919		1920		1921		1922	
	Pounds	Estimated value	Pounds	Estimated value	Pounds	Estimated value	Pounds	Estimated value	Pounds	Estimated value
Total	25,547,003	\$536,675.66	6,616,521	\$523,016.20	7,164,822	\$684,689.38	11,950,383	\$574,679.96	13,726,696	\$784,570.44
Cisco	23,095,279	476,589.18	5,899,890	430,802.24	6,361,253	574,758.42	8,569,964	390,711.37	9,416,591	528,947.57
Blue Pike	78,582	6,788.00	79,556	7,530.45	302,177	21,577.15	2,741,420	97,530.68	2,593,104	105,092.53
Yellow Perch	79,996	6,686.82	52,903	5,812.40	18,417	1,409.57	3,325.71	3,325.71	53,501	2,738.89
Pike Perch	6,451	888.23	2,672	344.35	6,128	888.49	5,679	915.25	1,214,215	74,600.64
White Fish	187,343	40,866.69	463,592	84,715.14	396,757	80,890.20	490,208	79,711.29	361,921	70,165.20
Lake Trout	97	19.40	586	69.06	704	85.26	2,536	405.45	371	26.89
Catfish	229	14.16	111	8.88	358	38.62	277	40.15	338	27.68
Carp	10,864	422.98	14,521	736.72	15,381	827.57	992	26.85	21,120	558.26
Sturgeon	14,579	271.94	615	245.67					889	355.60
Barbot	72,690	3,418.41	102,765	2,751.29	93,667	4,264.10	68,996	2,013.21	64,646	2,067.18
Miscellaneous										
Total	17,611,153	\$1,145,069.82	16,977,513	\$897,025.20	6,024,380	\$501,221.00	5,001,455	\$484,114.95	4,408,194	\$512,183.57
Cisco	14,349,200	968,695.83	13,499,438	695,509.58	1,060,953	83,217.86	1,126,321	122,237.26	1,624,737	198,048.23
Blue Pike	3,013,490	150,788.13	3,076,901	162,274.88	4,432,412	337,542.02	2,935,674	211,015.60	2,189,557	214,378.73
Yellow Perch	98,301	5,300.06	199,402	11,011.02	159,693	12,837.47	76,394	6,448.65	206,329	19,881.37
Pike Perch	9,184	1,296.97	18,401	2,021.70	14,619	2,101.69	10,299	1,444.59	19,175	2,675.61
White Fish	66,895	16,331.78	111,888	22,803.42	248,570	60,562.03	665,391	124,690.74	288,135	72,475.51
Lake Trout	144	11.52	290	28.68	15	2.25	48	8.64	52	6.50
Catfish	32,196	976.71	29,244	1,267.17	959	141.80	1,994	360.96	3,157	376.50
Sturgeon	288	113.20	808	280.65	18,685	749.18	50,297	3,162.53	3,465	125.13
Barbot	200	2.00			711	281.95	1,776	710.40	1,109	443.60
White Bass	60								7,443	117.91
Mullets									4,343	347.44
Miscellaneous	41,195	1,641.22	41,141	1,828.10	8,101	215.32	193,351	14,055.38	20,329	577.41
Total					79,652	3,569.43			40,363	2,729.63

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LAKE FISHERIES, 1927
Catch by States

Species	New York		Pennsylvania		Ohio		Michigan	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
Lake Trout	50,610	\$7,993	52	\$7			6,783,335	\$1,064,651
White Fish	239,869	55,448	288,135	72,476	242,101	\$48,420	4,180,492	751,549
Lake Herring	102,347	8,990					9,923,532	316,994
Chubs							2,604,661	237,668
Cisco	612,050	77,435	1,624,737	198,048	113,452	13,614		
Sturgeon	24,546	11,919	1,109	444			12,861	4,033
Yellow Pike	24,522	4,292	19,175	2,676	1,268,670	204,256	1,007,387	221,123
Blue Pike	497,396	49,445	2,189,557	214,379	4,636,669	296,747		
Sauger "Mullet"					1,144,197	89,247	50,264	4,621
Sheepshead					971,666	43,725	3,491,154	240,097
Yellow Perch	140,776	9,670	20,329	577	4,065,713	89,446	261,224	4,000
Pike (Jacks)	79,555	7,838	206,529	19,881	2,468,417	182,663	665,470	51,804
Carp							63,661	5,794
White Bass	18,879	1,660	3,465	125	733,911	36,696	2,904,909	125,811
Catfish					116,781	11,678		
Barbot	41,950	7,427	3,157	347	535,730	41,259	198,117	27,129
Bullheads	88,700	9,256	7,443	118	349,921	6,998	15,534	581
Miscellaneous	78,563	8,434	6,555	1,384	6,715	134	338,413	24,296
Total	2,019,542	\$257,807	4,408,194	\$712,184	16,653,943	\$1,064,883	32,503,014	\$3,078,151

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LAKE FISHERIES, 1927
Catch by States

Species	Indiana		Illinois		Wisconsin		Minnesota		Total	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
Lake Trout	252,546	\$50,509	167,354	\$31,797	2,912,763	\$520,173	325,699	\$45,412	10,492,359	\$1,720,542
White Fish	22,436	5,609	---	---	388,433	68,458	81,462	10,874	5,462,928	1,010,834
Lake Herring	143,352	14,355	29,045	2,905	2,702,000	90,829	9,275,861	329,277	22,177,127	763,330
Chubs	234,184	28,104	175,270	21,032	3,042,758	276,258	559,413	33,746	6,616,286	596,808
Cisco	---	---	---	---	800	190	---	---	2,350,239	289,097
Sturgeon	---	---	---	---	48,839	8,983	1,281	542	40,597	17,128
Yellow Pike	---	---	---	---	---	---	656,723	98,761	3,025,336	540,091
Blue Pike	---	---	---	---	---	---	---	---	7,323,592	560,571
Sauger "Mullet"	1,949	195	---	---	---	---	51,273	4,151	1,245,734	98,019
Sucker	---	---	---	---	---	---	139,471	3,693	4,765,345	297,957
Sheepshead	---	---	---	---	---	---	---	---	4,360,745	94,791
Yellow Perch	92,488	11,699	16,690	2,003	1,445,664	71,290	20,653	2,953	4,995,266	348,631
Pike (Jacks)	---	---	---	---	22,956	2,306	311,475	17,333	398,092	25,493
Carp	---	---	---	---	5,200	520	7,426	497	3,698,500	162,789
White Bass	---	---	---	---	---	---	36,111	3,971	126,324	12,545
Catfish and Bullheads	---	---	---	---	---	---	682,169	31,435	815,065	80,163
Tullibees	---	---	---	---	---	---	25,804	444	682,169	31,435
Burbot	23,561	2,356	---	---	---	---	---	---	510,972	19,753
Miscellaneous	5,200	1,300	---	---	1,840,043	87,948	14,495	1,418	2,289,784	124,914
Total	775,716	\$113,507	388,339	\$57,737	12,410,466	\$1,127,015	12,167,316	\$583,607	81,320,550	\$6,794,891

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LAKE FISHERIES 1913-1927
Catch by Lakes

Year	Lake Ontario	Lake Erie	Lake Huron	Lake Michigan	Lake Superior	Lake of the Woods,† Rainy Lake and Namakan Lake	Total
1913	210,000	22,120,000	11,184,000	26,994,000	6,417,000	1,384,000	68,309,000
1914	277,000	53,571,000	8,248,000	28,195,000	7,088,000	1,246,000	98,625,000
1915	395,000	59,509,000	10,245,000	31,680,000	5,694,000	1,425,000	108,948,000
1916	317,000	41,223,000	17,145,000	23,023,000	5,437,000	1,287,000	88,432,000
1917	656,000	41,416,000	12,512,000	29,317,000	9,889,000	2,103,000	95,893,000
1918	524,000	51,479,000	14,966,000	26,675,000	11,546,000	1,489,000	106,679,000
1919	472,000	35,154,000	15,240,000	29,820,000	10,500,000	1,277,000	92,463,000
1920	314,000	32,192,000	11,250,000	23,053,000	9,267,000	1,299,000	77,375,000
1921	1,855,000	46,731,000	9,330,000	17,018,000	7,476,000	1,048,000	83,458,000
1922	889,000	40,912,000	13,481,000	16,605,000	6,569,000	978,000	79,434,000
1923	710,000	44,378,000	9,920,000	15,358,000	7,584,000	1,159,000	79,109,000
1924	1,049,000	40,264,000	9,074,000	17,694,000	8,944,000	1,256,000	78,281,000
1925	446,000	26,639,000	6,567,000	21,710,000	12,307,000	1,463,000	69,132,000
1926	788,000	25,057,000	13,132,000	20,495,000	13,436,000	2,392,000	75,300,000
1927	698,000	23,796,000	15,711,000	23,681,000	15,302,000	2,139,000	81,327,000
Average	640,000	38,963,000	11,867,000	23,421,000	9,163,000	1,463,000	85,517,000

† Includes the catch in Lake Ontario proper and Chaumont Bay in the years from 1913 to 1924 inclusive, Lake Ontario proper in 1925, and Lake Ontario proper, Niagara River below the falls, St. Lawrence River and Chaumont, Black River, Port, Great Sodus and Little Sodus Bays, in 1926.

‡ Does not include the catch in Namakan and Rainy Lakes prior to 1926.

Note.—The catch in the Detroit River, St. Clair River and Lake St. Clair are not included in these statistics.

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(Distribution of Fish for the Year 1926—Giving Value)

County	Trout	Bass	Pike	Yellow Perch	Sunfish	Catfish	Frogs	Minnows	Blue Pike	Cisco & White Fish	Miscel.	Total For County	Value
Tioga	46,250				5,250	1,500						52,980	4,687.40
Union	9,560				1,500		18,000					29,060	1,873.60
Yenango	13,900	20,000	3,440,000	880,000	3,000	2,500						4,358,700	9,536.00
Warren	26,550	20,000	1,700,000	1,804,000	15,000		10,000	(Tadpoles)				3,575,550	11,075.00
Washington	1,100			900	3,000							5,000	366.00
Wayne	14,975	48,700	4,000,117	588,740	6,400	66,845		25,000			1,750	4,732,667	24,869.25
Westmoreland	19,900			250,000	6,500							276,400	3,155.00
Wyoming	6,625	2,500	1,152,000	1,925	4,000			20,000				1,187,050	2,854.62
York	13,500	3,750	1,500,000	1,440,125	10,500	300	1,500	30,000				2,999,675	4,705.50
Total												326,736,567	545,787.53

The following is a report of exchange of eggs, also fish distributed for exhibition purposes.

Name	Species of Fish or Eggs	Number	In Exchange For
Province of Ontario, Canada	Eyed Brook Trout Eggs	500,000	S. M. Adult breeding Bass.
U. S. Bureau of Fisheries	Eyed Brook Trout Eggs	500,000	Eyed Cisco for L. Wallenpaupack.
U. S. Bureau of Fisheries	Eyed Brook Trout Eggs	1,451,000	White Fish & Cisco Eggs.
State of N. C. Waynesville Hatchery	Eyed Brook Trout Eggs	200,000	Terrapin.
Trexler Hatchery—Allentown, Pa.	Eyed Brown Trout Eggs	340,180	Brook Trout Eggs.
Blooming Grove, Pike County	Pike Perch Fry	250,000	Fingerling Brook Trout.
Fairmount Park Aquarium, Philadelphia	Gold Fish	220	Exhibition and Scientific Purposes.
Fairmount Park Aquarium, Philadelphia	Trout	1,321	Exhibition and Scientific Purposes.
Schools	Tadpoles & Frogs	202	Exhibition and Scientific Purposes.
Individuals	Miscellaneous	61	Exhibition and Scientific Purposes.
	Catfish & Sunfish	6,933	To assist in starting fish ponds.

COMMONWEALTH OF PENNSYLVANIA
BOARD OF FISH COMMISSIONERS

Harrisburg, Penna.

Statement of the Distribution of Fish—January 1 to December 31, 1927

Specie	Size	Age	Number	Value (If Purchased)
Trout	4" to 10 & 12"	1 and 2 year old	1,318,445	\$152,886.65
Bass	2 to 6 inch	3 to 6 months	532,900	159,870.00
Pike Perch	Fry		39,183,400	20,087.60
Yellow Perch	Fry & 1 & 2 yrs.		156,869,955	56,776.87
Sunfish	1½ to 5 inch	Fry & 1 and 2 years	692,600	35,318.00
Catfish	Adult	4 month to 1 year	65,055	4,700.50
Minnows	1½ to 8 inch	4 month to 1 year	997,000	11,010.00
White Fish	Fry		1,500,000	225.00
Cisco	Fry		20,660,000	3,069.00
Blue Pike	Embryo		12,690,000	3,172.50
Frogs			114,700	5,735.00
Miscellaneous			20,400	10,276.00
Total			234,644,455	\$463,157.12

(Distribution of Fish for the Year 1927—Giving Value)

County	Trout	Bass	Pike Perch	Yellow Perch	Sunfish	Catfish	Frogs	Minnows	Blue Pike	Cisco & White Fish	Miscel.	Total For County	Value
Adams	500											500	\$50.00
Allegheny			224,000	327,500	5,700		2,000					7,700	328.00
Armstrong			380,000		1,200	900						563,600	382.75
Beaver			1,200,000	6,000	75,500	200						455,700	4,702.00
Bedford	6,500		484,000		6,000	2,000		10,000				1,238,000	2,455.80
Berks	7,800	20,000	200,000		48,000	10,400		75,000				642,200	11,412.00
Blair	11,200	5,000	484,000	6,750	2,000			40,000			500	258,700	3,974.00
Bradford	27,100	17,500	750,000	7,750,000	6,000	3,400						541,350	9,157.50
Bucks	20,500		300,000		23,000		2,500					8,549,200	6,400.90
Butler	7,920		224,000		4,000	2,300		2,500				374,820	1,172.20
Cambria	18,000	5,000			1,500		10,500	15,000				276,300	4,655.00

(Distribution of Fish for the Year 1927—Giving Value)

County	Trout	Bass	Pike Perch	Yellow Perch	Sunfish	Catfish	Frogs	Minnows	Blue Pike	Cisco & White Fish	Miscel.	Total For County	Value
Cameron	20,980		672,000			1,500		10,000				704,480	2,433.30
Carbon	47,120		692,000		2,000	375	5,000	60,000				806,495	7,734.90
Centre	30,800		392,000		10,500	1,500						434,800	4,732.00
Chester	21,600	4,500		750,000	9,000	1,550	2,000					788,650	5,142.00
Clarion	13,900		448,000		2,000	800						464,700	2,003.50
Clearfield	62,940		290,000		10,400	1,500		5,000				279,840	7,384.90
Clinton	28,700		600,000		10,000	1,500		95,000				1,985,200	4,890.50
Columbia	13,600		121,000		4,500	100		10,000				461,700	2,658.75
Crawford	11,260	57,500	3,196,000	4,210,545	32,900	1,300		25,000				7,534,505	24,705.35
Cumberland	23,625		960,000	2,103,920	23,000	1,250	3,000	70,000				3,291,825	12,157.25
Dauphin	7,900	2,500	1,220,000	318,850	12,000	250		45,000				1,606,500	3,878.25
Delaware				750,000	9,500	1,600	4,000				100	761,200	1,047.00
Elk	47,210	3,000	924,000	875,000	1,400		500					1,814,730	5,517.60
Erie	10,830		1,660,000	56,400,000					12,690,000	1,500,000	(White Fish) (Cisco)	80,110,000	3,069.80
Lake Erie										16,860,000			14,635.50
Fayette	23,100		100,000		3,100	100		15,000				141,300	2,348.00
Forest	23,230		80,000		2,000							105,230	3,019.70
Franklin	21,100	7,500	336,000		13,500		1,500					379,600	5,631.00
Fulton	10,700		112,000		10,500	1,600						134,800	2,297.00
Greene			200,000	1,687,750	7,500	400						1,895,650	1,267.88
Huntingdon		20,000	1,268,000	2,000,000	7,500	2,400	8,400					3,340,500	12,642.00
Indiana	34,200	5,000		337,500	2,500			15,000				372,100	3,314.75
Jefferson	17,600			506,750	4,500	200						529,050	2,351.37
Junata	5,400		448,000	750								464,150	1,017.00
Lackawanna	16,600		1,331,000	943,340	18,500	240	2,500	10,000			1,200	2,922,380	5,217.25
Lancaster	9,850	40,000	750,000	4,612,500	24,100	5,335	19,800	10,000				5,471,585	18,640.75
Lawrence	9,150	40,000	963,200	6,000	16,000			76,000				1,110,350	15,583.85
Lebanon	1,000	20,000	242,000	312,800	10,000	300		10,000				596,700	7,107.25
Lehigh	18,850	8,500		200	5,000	300		20,000				52,850	5,971.50
Luzerne	74,700	12,500	968,000	4,690,650	22,000	1,400	2,500	20,000				5,791,150	16,955.25
Lycoming	48,200	40,000	112,000	1,250,000	6,000			5,000				1,461,200	18,121.00
Mercer	6,000	20,000	540,000	1,519,250	9,000	1,200	3,000	36,000				2,134,450	8,919.63
McKean	43,500			1,350,000	7,500	600						1,401,600	5,478.00
Mifflin	22,500		450,000				1,500					474,000	2,800.00
Monroe	66,170		363,000		6,000		2,500	30,000				467,670	9,302.45
Montgomery	1,100	11,500		500,000	17,500	3,700						533,800	4,816.00
Montour			363,000	312,500								675,500	337.75
Northampton					16,000							51,550	3,350.70
Northumberland	20,550	7,500	271,000									281,300	2,665.50
Perry	2,800	12,500	600,000	1,250,000	15,000	200	6,500	15,000				1,912,650	7,236.00
Philadelphia	13,450		350,000	10,000,000	14,000			100,000				10,464,000	3,392.50

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Pike	29,550	20,000	4,080,600	27,221,150	11,600			100,000	(Cisco)	1,500,000	8,000	32,970,900	32,038.12
Potter	64,810				3,000	75						67,885	6,621.35
Schuylkill	15,200	30,000	1,500,000	2,250,000	22,000	6,100	4,000	5,000				3,822,300	14,595.00
Snyder	2,000	42,500	1,168,000	2,505,700	14,800	900	5,000					3,738,600	16,044.00
Somerset	23,220		1,196,000	1,350,000	8,000	900						2,588,120	4,733.40
Sullivan	39,700			1,875,000								1,914,700	7,142.50
Susquehanna	19,425	15,000	1,452,000	1,563,500	18,000						250	3,067,175	8,999.00
Tioga	20,700				17,500	600						38,800	3,212.50
Union	38,600		1,200,000	1,012,950	13,500	3,200		15,000				2,283,250	6,243.25
Venango	18,610	10,000	336,000		3,200							367,810	5,261.85
Warren	22,820	15,000	336,000	9,600	3,200	1,650	2,000					386,470	7,712.70
Washington	1,000		100,000	675,000	9,500	400		2,500				788,400	1,126.50
Wayne	39,625		1,694,600	10,098,150	14,000	250			(Cisco)	2,300,000	8,850	14,155,475	16,170.17
Westmoreland	22,100	5,500	336,000									364,000	4,450.0
Wyoming	14,100	10,000	242,000	625,300	4,000							896,900	6,680.50
York	5,200	7,500	304,000	1,253,750	11,100	450	16,500	20,000			1,500	1,618,500	5,612.00
Total												234,644,455	\$463,157.12

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The following is a report of exchange of fish and eggs, also fish distributed for exhibition, scientific and fish cultural purposes.

Name	Species of Fish or Eggs	Number	In Exchange for
U. S. Bureau of Fisheries	Eyed Brook Trout Eggs	1,200,000	Various species of fish & eggs
State of California	Eyed Brook Trout Eggs	500,000	Brown Trout Eggs
Province of Ontario—Canada	Eyed Brook Trout Eggs	200,000	Adult S. M. Black Bass for breeders
Trexler Hatchery—Allentown	Eyed Brook Trout Eggs	75,000	Brook Trout Eggs
Trexler Hatchery—Allentown	Eyed Brook Trout Eggs	11,000	Brook Trout Eggs—Infusion of new blood
Individuals	Sunfish and Catfish	7,800	To assist in starting fish ponds
U. S. Bureau of Fisheries	Bass, Sunfish, Yellow Perch	5,000	Brook Trout Eggs
U. S. Bureau of Fisheries	Brook Trout—6" to 8"	2,300	Various species of fish & eggs
Wildwood Park Outing Club	Catfish, Sunfish, Pickerel and Yellow Perch	1,877	Exhibition and Scientific Purposes
School and Aquariums—Exhibition	Miscellaneous		Brook Trout Eggs

END OF YEAR